FEBRUARY 3, 1958

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

LIBERTY
IN GOD WE
1924
TRUST

COST CRISIS

and how to beat it . . . Page 103

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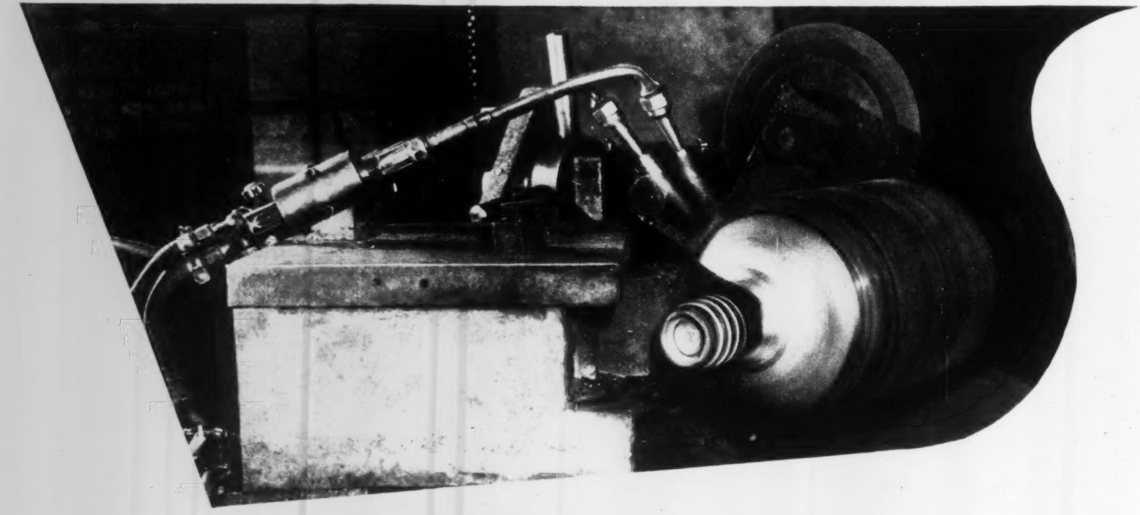

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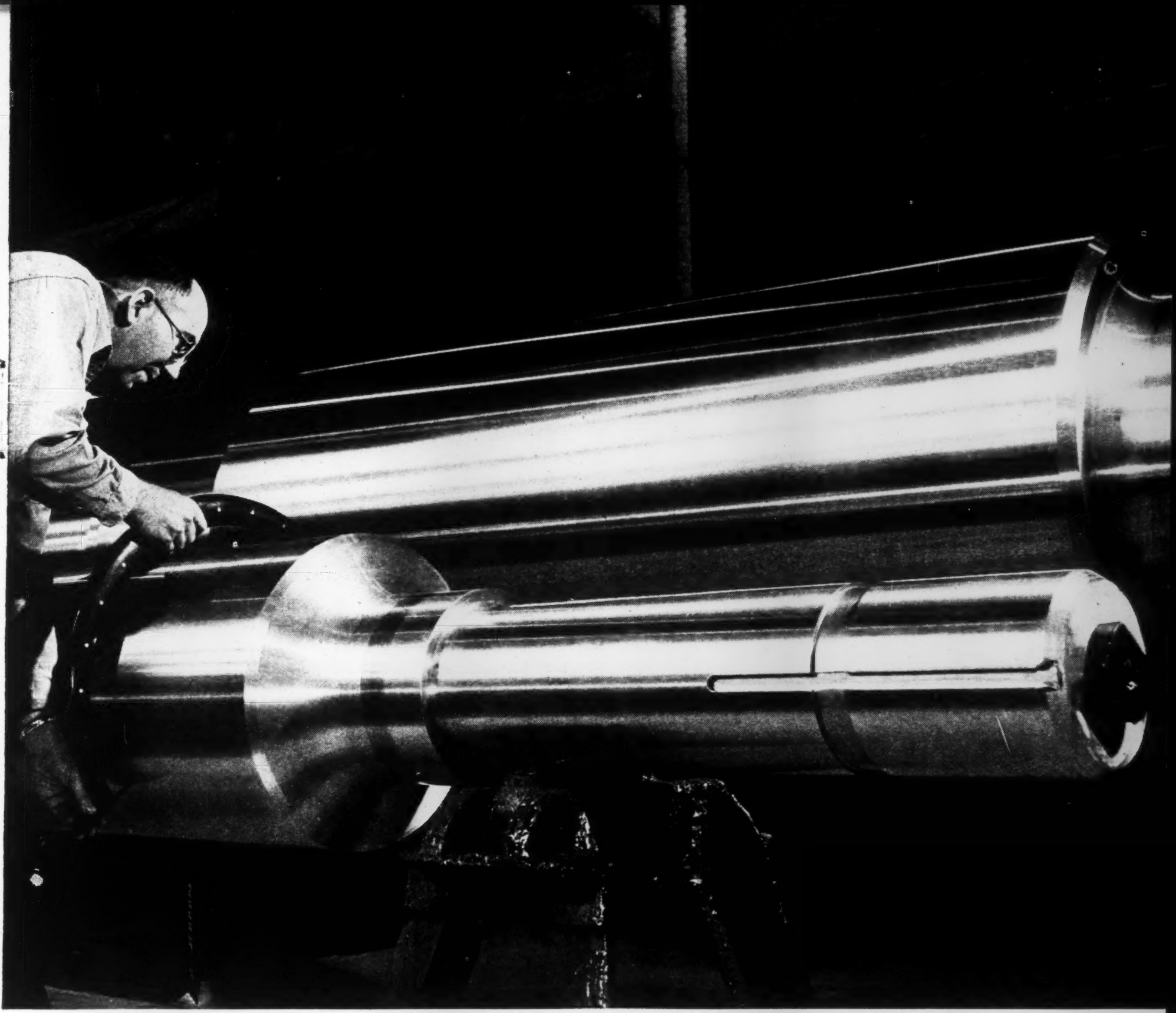

Two More Big Ones Ready to Go

Here are two Bethlehem forged-steel rolls that were photographed in the shop as they were being readied for shipment. The unit shown in the background is a real heavyweight, just about as massive as they come. The one being calipered isn't exactly a midget itself.

Because of their overall dimensions, big rolls like these are the "show pieces" of the shops. But of course, they by no means represent the entire Bethlehem line. No matter what size—or what type—you require, Bethlehem will make it for you. Some of the rolls we produce weigh 20 tons or more. Others are so small that they can be lifted by hand.

All Bethlehem rolls, regardless of size, are made with exacting care. When you entrust us with your order, you can be sure that specifications on hardness, finish, and other details will be met in full. And the job will be finished on time.

We suggest you call us the next time you're in the market. Remember, forged-steel rolls have been a Bethlehem specialty for many years.

TYPICAL USES FOR BETHLEHEM FORGED-STEEL ROLLS

Cold-rolling ferrous sheets and strip

Running-down and finishing operations on copper and brass sheets

Hot- and cold-rolling aluminum sheets

Cold-rolling aluminum foil

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BETHLEHEM STEEL

Largest Special Metals Company Formed

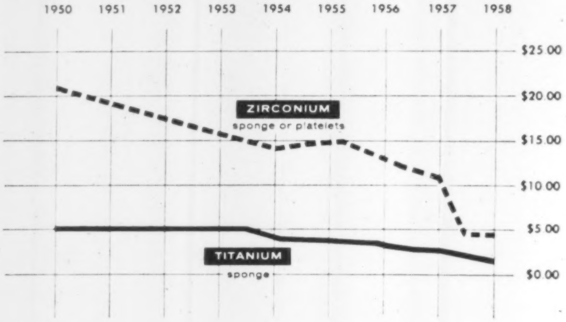
MALLORY-SHARON
NOW INTEGRATED PRODUCER OF
TITANIUM, ZIRCONIUM, SPECIAL METALS

Mallory-Sharon Titanium Corporation has broadened its scope in the special metals field with acquisition of all the titanium and zirconium sponge production facilities of National Distillers & Chemical Corporation, plus full ownership of Reactive Metals, Inc., formerly owned jointly by Mallory-Sharon and National Distillers.

Our new name is Mallory-Sharon Metals Corporation. Our products include titanium, zirconium, and hafnium in sponge form and in a broad range of mill products including sheet, plate, rod, bar, billets, etc. Planned for the future are other special metals.

LOW COST PROCESS—Now a fully integrated producer, Mallory-Sharon will use the new sodium reduction process for making titanium and zirconium sponge. This process is believed to be the lowest cost method developed to date for this purpose, and produces metal of unusually high ductility. It will contribute to making titanium and zirconium economically attractive in more and more applications.

WHAT THIS MEANS TO YOU—Mallory-Sharon's leadership in the special metals field will mean continuing improvements and importance to these metals. In addition to titanium's broad use in aircraft and missiles, and zirconium's in the nuclear field, both metals provide exceptional corrosion resistance—offering lower costs in a broad range of processing and industrial applications. Let us help *you* design ahead with these new metals.



Regular price reductions in titanium and zirconium sponge have also been reflected in lower prices for mill products. This trend shows the wisdom of evaluating titanium and zirconium now for your new products.

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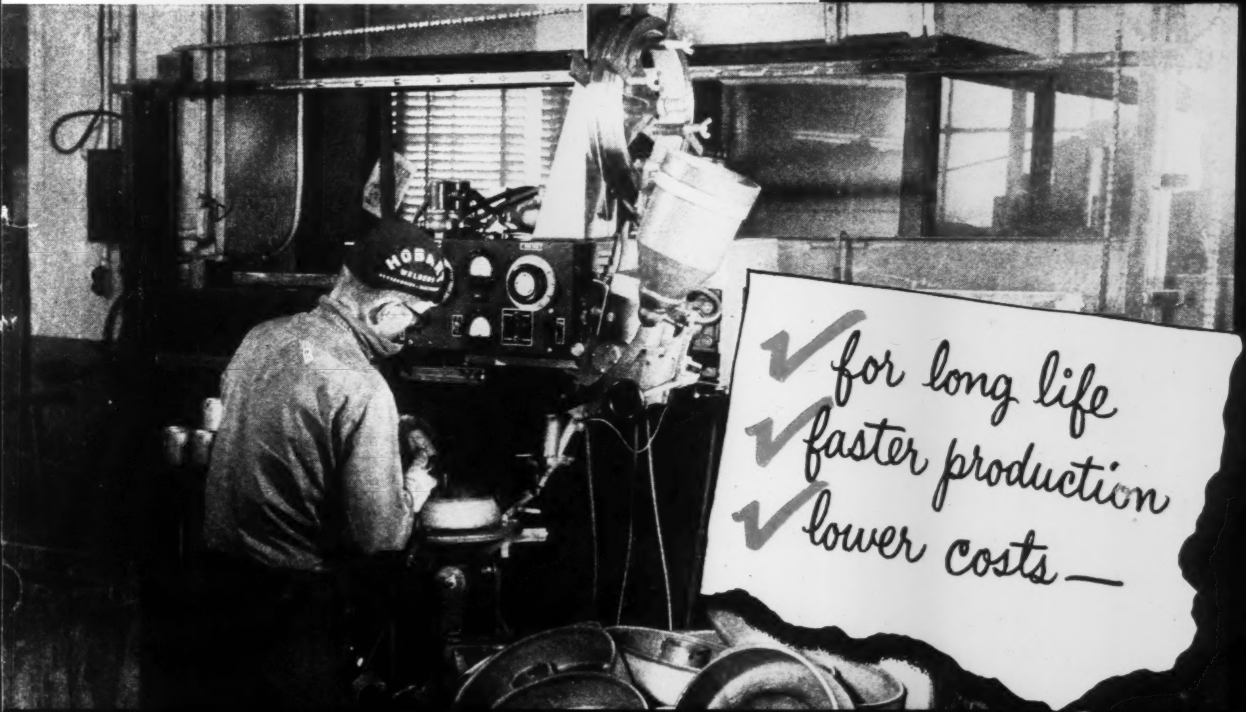

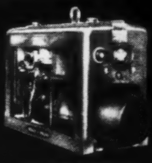
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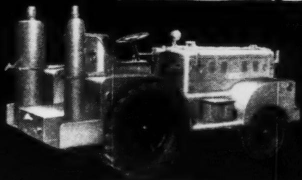
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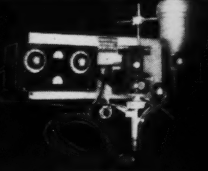
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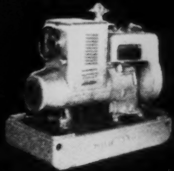
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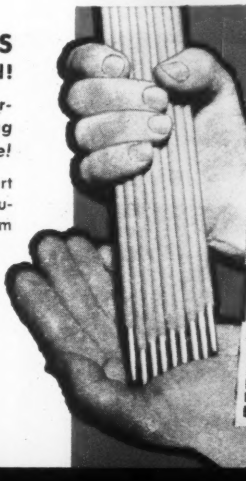

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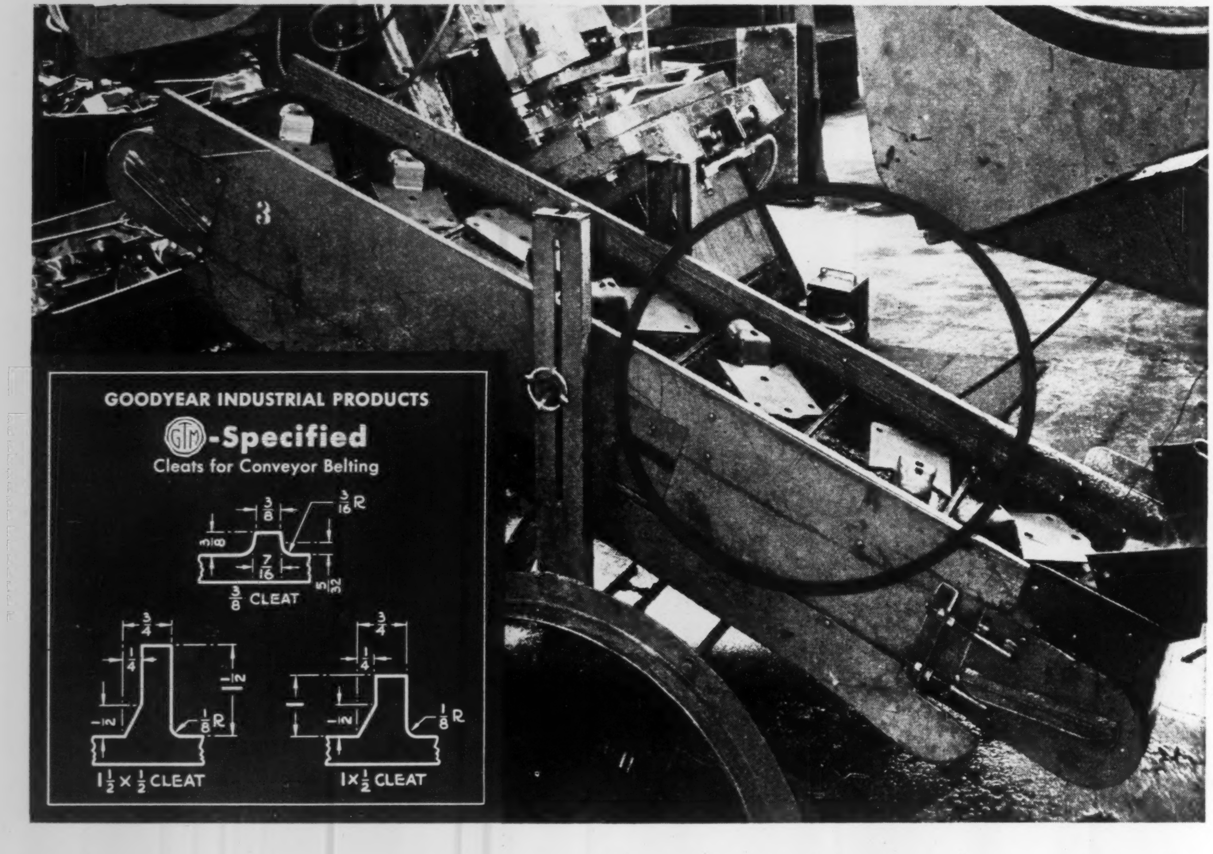

They're raising production—and lowering costs by 1/3

Portable conveyors—between production lines on different levels—were a "must" at this Midwestern automotive parts plant. But the specially constructed belts they used soon cut and flaked off. They became oil-soaked and accumulated dust—dirtying the parts. Worse still, they stretched—had to be taken up every 6 weeks. Even then, none lasted more than a year.

Then the G.T.M.—Goodyear Technical Man—recommended Style ORS Cleated Belts. They're made of rubber especially compounded for extreme resistance to oil, cutting and abrasion. And the tough, firm-gripping cleats are molded right into the rubber for durability.

The savings are impressive: The G.T.M.'s less-expensive belts eliminated the need for parts washing. And after 3 straight years of full service—*three times the life of competitive belts*—they're still going strong.

Like to have savings like these on your production lines? The fastest way to find out is to call the G.T.M. He'll be Johnny-on-the-spot if you contact your Goodyear Distributor—or write Goodyear, Industrial Products Division, Akron 16, Ohio.

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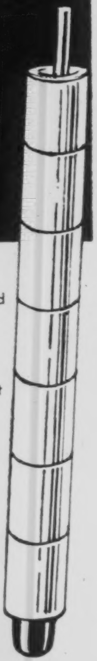

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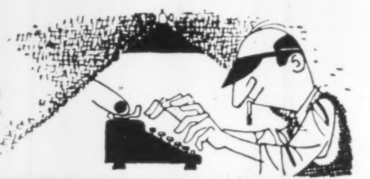


Birth of a Series

If you were shocked at the sight of the riven dollar on this week's cover, don't report us as mutilators of U. S. money because a smart lawyer could introduce evidence showing that although coin is money, money is not necessarily coin. Money might be shells, skins, wampum, cattle, women—oops! That was an unfortunate inclusion. Let us hasten to make amends by submitting that women are far more precious than cattle. In certain African countries on the cattle standard, records show that even the most indifferent looking bride cannot be acquired for less than five cows.

But that riven dollar, now: It is a symbol you'll see frequently in STEEL during the remaining months of 1958. It symbolizes what STEEL terms "The Cost Crisis." This condition comes about when rising costs press too heavily on profits. Seen on a graph, the production curve sprouts from the southwest corner of panel, rises gracefully in a northeast direction, and eventually levels off. It simply has to, you know; if it didn't, all of us would be up to our armpits in production. The cost curve, according to the illustration, also sprouts from the southwest corner of the graph, rises on a course that takes it east-northeast, and continues east at a comfortable distance south of the production curve. If the cost curve approaches the production curve too closely, trouble may be anticipated; if it tends to converge, look for Trouble with a capital T. If it crosses, prepare to abandon ship.

Rising costs and static production are bugbears that frighten entrepreneurs and tycoons alike. Since the problem is one that concerns every metalworking enterprise in the country, the editors of STEEL have instituted with this week's issue a new campaign called "The Cost Crisis: How To Beat It." The first article appears on Page 103.

During the course of a preliminary editorial conference, we heard that newer and modern equipment could produce more at less cost; we heard about replacement, depreciation, obsolescence, incentive, mismanagement, master management, and all the little managements.

"This thing is too big for a single article," declared Editor Walt Campbell, setting his lateral bicuspids more firmly in the mangled end of a cigar. "There must be dozens—no, hundreds of ways to fight the cost crisis. Why, this series will snowball; I expect it will be as popular and important as our Management Series."

Smoke That Cigaret

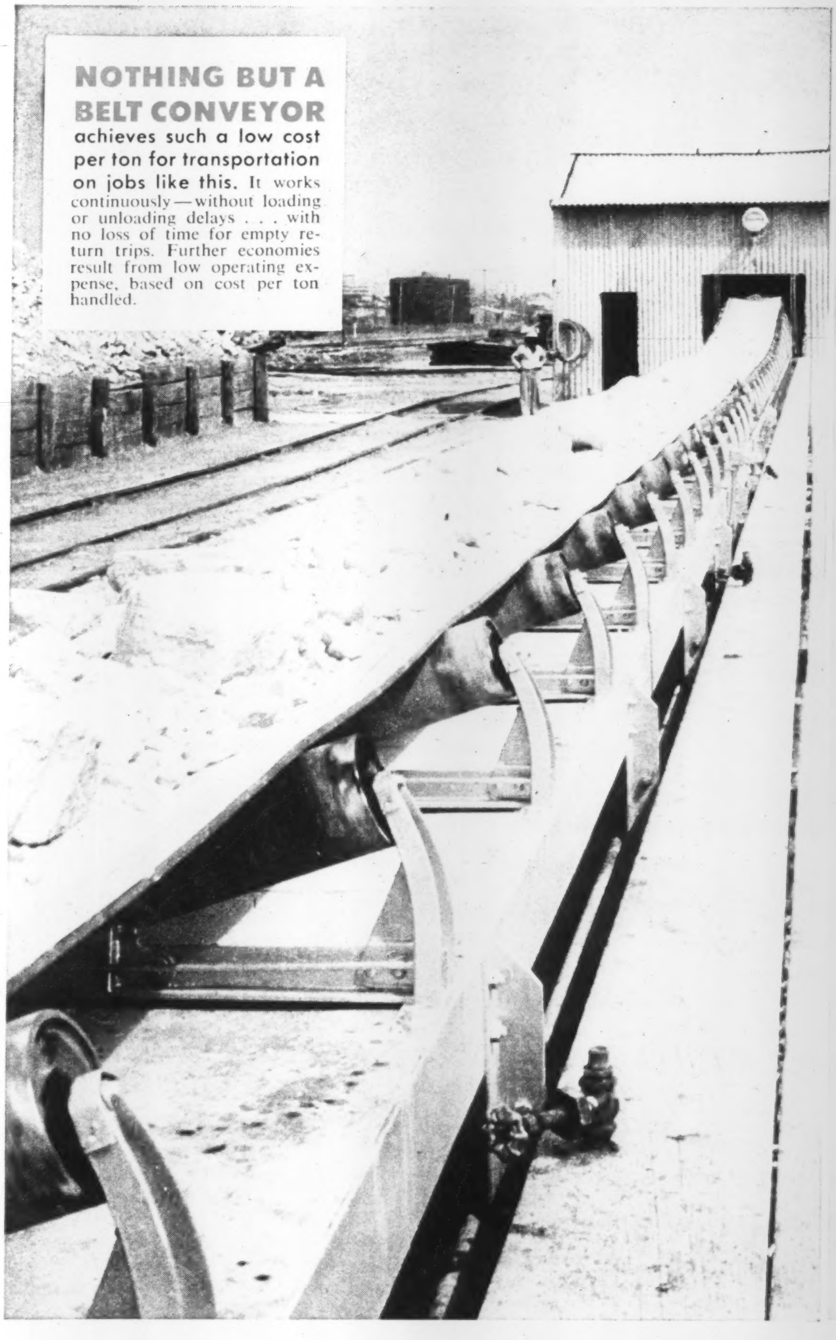
First one in with the correct solution to "Rifle Row" was R. D. Sulzer, General Electric Co., Ft. Wayne, Ind. Closely following was William du Barry Thomas, a naval architect, I. D. Associates Inc., Kingston, N. Y., who is as peppery as he is brilliant. The answer he worked out is so fantastically precise we aim to frame it. (The answer, of course, is: Major Tank; Brigadier Grenade; Lieutenant Howitzer; Colonel Verylight; Captain Mustardgas.) Eddie Shaw and Don Brodie, Bell Helicopter Corp., Ft. Worth, Tex., came in with their answer in the next mail. Moreover, they were kind enough to include a similar puzzle:

Brown, Perkins, Turner, Jones, and Riley are playing poker. They smoke Luckies, Camels, Old Golds, Kools, and Chesterfields. At the beginning of the game, each player has 20, 15, 8, 6, and 3 cigarets, but not necessarily respectively. Later in the evening, when no one was smoking, this happened:

1. Perkins asked for three cards. 2. Riley has smoked half his original supply, or less than Turner had smoked. 3. The Chesterfield man originally had as many more, plus half as many more, plus 2½ more cigarets than he has now. 4. The man who smokes Luckies has smoked two more than anyone else, including Perkins. 5. The man who draws to an inside straight lit his fifth (and last cigaret he smoked) on the tipped end. 6. Brown drew as many aces as he originally had cigarets. 7. The Camel man asked Jones to pass Brown's matches. 8. No one has smoked all his cigarets. How many, and of what brand, did each have when he began?

Shrdlu

(Metalworking Outlook—Page 57)



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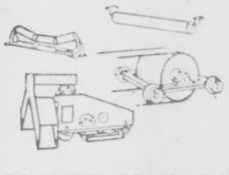

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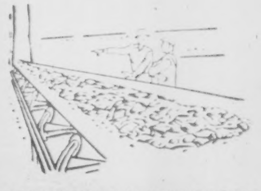

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"Kingsbury jobs" — as the automotive and appliance industries frequently call them — are typically done in this manner: The manufacturer sends Kingsbury a print (or sample) of his part, specifying operations and the production rate required. Kingsbury then incorporates the appropriate standard operating units, base, indexing unit and drive, to build an automatic drilling and tapping machine *to do what the customer wants, at the rate he wants.* Test runs by Kingsbury *before* shipment, and *delivery of a fully tooled machine* ready to produce, provide positive assurance that performance will match production requirements.

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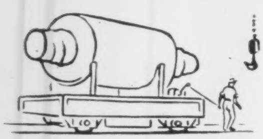

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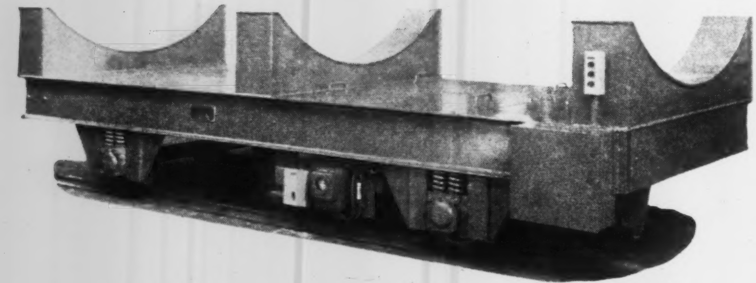

ATLAS WALK-ALONG

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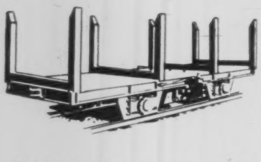

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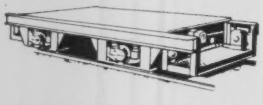

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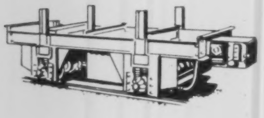

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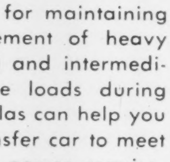

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LETTERS TO THE EDITORS

Anyhow, Business Increased

I requested reprints of the editorial, "Don't Cry Wolf" (STEEL, Feb. 4, 1957, p. 57), because of the fine coverage of a subject which I personally feel is too often overlooked.

It seems that editorials and news articles on business subjects sometimes take a negative attitude.

The minute there is any hint of a recession in business, it seems that everyone starts playing it up regardless of whether they have facts or are just surmising. This can snowball into a rather serious situation. I feel that we in this country have, many times in the past, thought ourselves into business recessions that could have been avoided or minimized had a more optimistic viewpoint been taken.

Because of this feeling, I endeavor to pass on to our sales organization every constructive, optimistic article on business conditions that I can find. This, on the surface, may appear to be a one-sided campaign and that I am not being entirely fair. I feel that I am only endeavoring to offset the negative approach to which our salesmen are subject on all sides out in the field.

We cannot permit our salesmen to take a negative approach. I don't believe any salesman to be successful can do so.

How much good this particular article did in offsetting some of the more damaging articles, I would have no way of knowing. All I can hope for is that it did some good and contributed to the fact that our firm showed an increase in business in 1957 over 1956.

Robert Allyn
Sales Manager
Owatonna Tool Co.
Owatonna, Minn.

Requests Gratify BDSA

STEEL's story based on our industrial scrap generation survey ("How Much Scrap Do You Produce?" Dec. 16, 1957, p. 69) is indeed of interest to us, and we wish to take this opportunity to thank you for your excellent presentation of this report. We believe that this material will help your readers.

You may be interested to know that the Business & Defense Services Administration has already received a number of requests for copies of our study as a result of your article. This is gratifying to us.

H. B. McCoy
Administrator
Business & Defense Services Administration
Department of Commerce
Washington

For Added Capacity Only

In your article, "J&L Joins Oxygen Steelmakers" (STEEL, Dec. 30, 1957, p. 62), you state that Jones & Laughlin will be making steel at $15 per ingot ton; you add that this will be hard to beat. It seems even harder to believe! It may be, however, that you are referring only to processing costs, though even this is

(Please turn to Page 12)

YOU CAN'T BARGAIN WITH SAFETY

In rotary drilling, pulling a 100-ton, two-mile string of drill pipe subjects the drilling line to the terrific stresses imposed by fast acceleration, shock loads, bending and overwinding on drums. Only wire rope with the highest degree of quality in hardness, strength and fatigue resistance can be used, for toolpushers know that . . .

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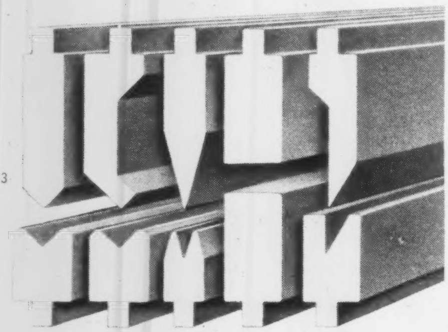

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Induction Hardened*
PRESS BRAKE DIES

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*Induction hardening is a special, high-frequency process used to harden the wear surfaces of CHICAGO dies. Field reports on CHICAGO *induction hardened* dies show up to ten times longer life than conventional press brake dies.

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Chicago 36, Illinois

8216

LETTERS

(Concluded from Page 10)

high for the basic oxygen process. I should certainly be glad of a little clarification on this point.

R. Sewell
Information Officer
Swinden Laboratories
Research & Development Dept.
United Steel Companies Ltd.
Moorgate
Rotherham, England

• *The $15 per annual ingot ton refers only to what it costs the company for the additional steelmaking capacity.*

Seeks Data on Stainless

I have been searching for figures on the usage of stainless steel piping . . . the total used per year and consumption by individual industry, such as food processing, heavy chemical, and pharmaceutical, or any similar figures that may be available.

If you would be kind enough to point to sources of information, I should be most appreciative.

Donald L. Rose
Sales Engineer
Technical Products Div.
Corning Glass Works
Corning, N. Y.

• *The only figures that we know of that would give an indication of the end use of stainless piping are those in the American Iron & Steel Institute's Report AISI 16-S. Reproductions of the latest reports are being sent to you. We also are sending a copy of the 16-page stainless steel study published by* STEEL (Nov. 4, 1957, p. 107).

Could Happen to Anyone

I would appreciate receiving two copies of the 1957 Metal Selector (STEEL, Oct. 28, 1957, p. 169). This copy passed through a number of hands getting to me and the selector was missing.

John R. Musch
Sales Engineer
Koehring Div.
Koehring Co.
Milwaukee

Firm Likes Annual Data

The 48-page section, "Facts and Figures of the Metalworking Industry," (Jan. 6, Page 159), is particularly interesting to our firm. We would like three copies for use and analysis.

W. C. Leste
Columbus Pipe & Equipment Co.
Columbus, Ohio

Enlightening Review

We would appreciate three copies of your article, "Marketing Shifts into High Gear" (Jan. 6, Page 115). We wish to compliment you. We have found it most enlightening in reviewing the business picture.

Donald P. Hunt
Office Engineer
Gifford & Co.
St. Louis

Ferrous Story Is Excellent

Your article, "Ferrous Castings Stretch Your Dollars" (Jan. 13, Page 70), is excellent. We would appreciate getting four copies.

Donald B. Fulton
Sales Engineer
Northern Malleable Iron Co.
St. Paul

Cracked shaft in Valdosta ... **His job: get a new one down to Georgia by tomorrow noon.** It's an emergency case, but it's not as tough as it sounds.

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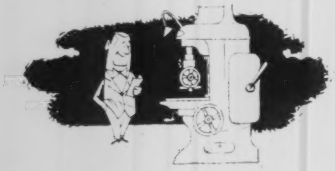

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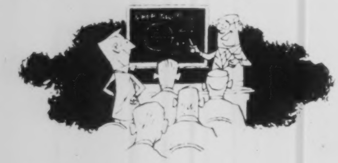

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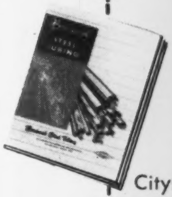

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Brand new from crown to base, the Niagara Automatic boasts bonus features throughout . . . features that are unavailable on any other press in this category. Yes, *everything* is new about it, differing sharply from modified, adapted straight side presses of conventional design. Every square inch of its extra massive, rugged construction is *heavier . . . far heavier* for vibration-free, precision performance at high speeds:

KING SIZE CRANKSHAFT AND CRANKPINS — substantially larger than those on traditional straight side presses.

ENTIRE DRIVE IS HEAVIER — gears, electro pneumatic friction clutch, brake, flywheel and motor.

EXTRA BEARINGS — for better support of crankshaft, feed take-off and main gear (or flywheel).

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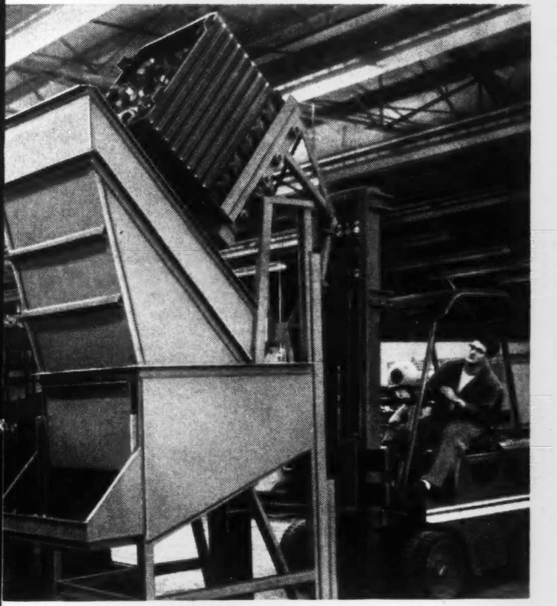
The multi-purpose units provide for: (1) Delivery of semi-finished parts to production stations for final machining. (2) Feeding of parts to machines in combination with hoppers built by Dresser's Ideco Division. (3) Receiving finished parts as they come off the machining line. (4) Storage of finished parts until ready for shipment.

Plant management estimates a saving of 10% in handling costs since the Republic Box and Skid Units were placed in service. Also, it is possible to maintain an accurate inventory of both finished and semi-finished parts and to reduce storage space requirements.

Future savings in maintenance costs should be realized because corrugated-steel construction of the boxes and skids provides strength, assures long service life at lowest per-year-cost.

Now is the time to talk over your handling or storage problems with a Republic Engineer. A specially designed or a standard unit could cut your costs or simplify an operation. No obligation. Just contact your Republic Materials Handling Representative. Or mail the attached coupon.



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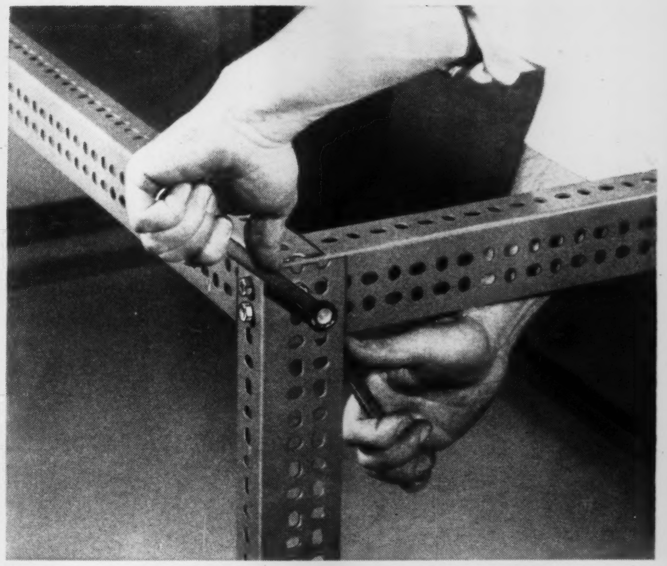

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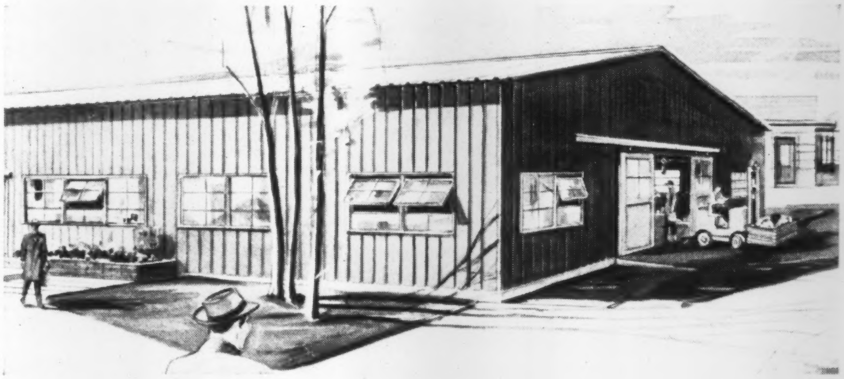

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CALENDAR
OF MEETINGS

Feb. 5-8, National Tool & Die Manufacturers Association: Winter board meeting, Ambassador Hotel, Los Angeles. Association's address: 907 Public Square Bldg., Cleveland 13, Ohio. Executive vice president: George S. Eaton.

Feb. 6-7, American Coke & Coal Chemicals Institute: Winter meeting, Drake Hotel, Chicago. Institute's address: 711 14th St. N. W., Washington, D. C. Executive secretary: Bernard M. Fitzgerald.

Feb. 6-7, Malleable Founders' Society: Technical and operation conference, Wade Park Manor, Cleveland. Society's address: 1800 Union Commerce Bldg., Cleveland 14, Ohio. Executive vice president: Lowell D. Ryan.

Feb. 10-12, American Management Association: Marketing conference, Hotel Statler, New York. Association's address: 1515 Broadway, New York 36, N. Y. President: Lawrence A. Appley.

Feb. 10-14, American Society for Testing Materials: Committee Week, Statler Hotel, St. Louis. Society's address: 1916 Race St., Philadelphia 3, Pa. Executive secretary: Robert J. Painter.

Feb. 11-13, Investment Casting Institute: Annual meeting, Roosevelt Hotel, New York. Institute's address: 27 E. Monroe St., Chicago 3, Ill. Executive secretary: H. P. Dolan.

Feb. 14-15, National Association of Metal Finishers: Winter meeting, Dinkler-Plaza, Atlanta. Association's address: 60 Bentley Rd., Cedar Grove, N. J. Executive secretary: P. Peter Kovatis.

Feb. 15-19, American Institute of Mining, Metallurgical & Petroleum Engineers: Annual meeting, Statler and Sheraton-McAlpin Hotels, New York. Institute's address: 20 W. 39th St., New York 18, N. Y. Secretary: Ernest Kirkendall.

Feb. 17-19, American Management Association: Midwinter personnel conference, Palmer House, Chicago. Association's address: 1515 Broadway, New York 36, N. Y. President: Lawrence A. Appley.

Feb. 18-20, Caster & Floor Truck Manufacturers Association. Annual meeting, New Weston Hotel, New York. Association's address: 27 E. Monroe St., Chicago 3, Ill. Executive secretary: H. P. Dolan.

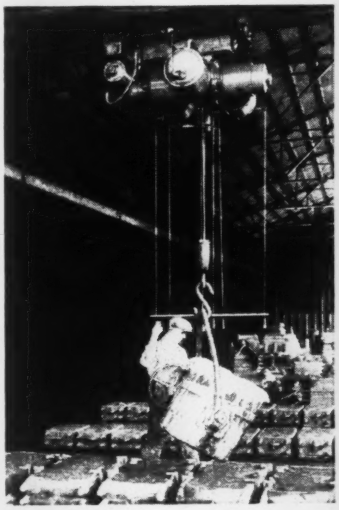
Feb. 19-21, American Management Association: Special research and development conference, Biltmore Hotel, New York. Association's address: 1515 Broadway, New York 36, N. Y. President: Lawrence A. Appley.

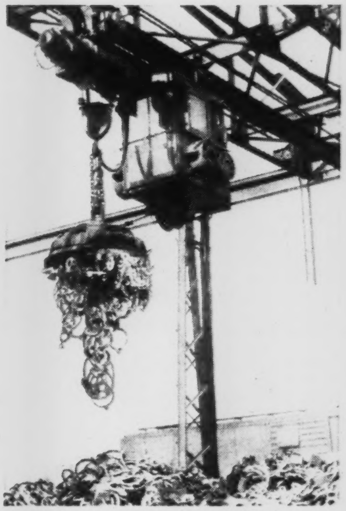
Feb. 24-26, Association of Iron & Steel Engineers: Western meeting, Hotel Statler, Los Angeles. Association's address: 1010 Empire Bldg., Pittsburgh 22, Pa. Managing director: T. J. Ess.

Feb. 26-28, American Management Association: Special general management conference, Roosevelt Hotel, New York. Association's address: 1515 Broadway, New York 36, N. Y. President: Lawrence A. Appley,

Mar. 2-6, American Society of Mechanical Engineers: Gas turbine power division conference and exhibit, Shoreham Hotel, Washington. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: C. E. Davies.

WHICH HOIST
fits your plant's needs?





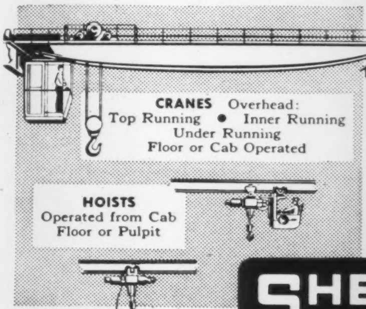
SHEPARD NILES
FLOOR-OPERATED HOIST

Operator primarily occupied with other duties. Uses hoist for fast, efficient handling of relatively short hauls.

SHEPARD NILES
CAB-OPERATED HOIST

Operator in cab moves loads along at high speeds, occupies best vantage point for spotting and stacking material.

THE RIGHT HOIST . . . can reduce your plant's handling costs. But which one is best for the job . . . a floor-operated hoist where the operator is freed for other duties or a cab-operated hoist where he is engaged fulltime moving loads through the air? Because Shepard Niles manufactures both types of hoists . . . as well as a complete line of cranes . . . we can approach your handling problem with an open mind.



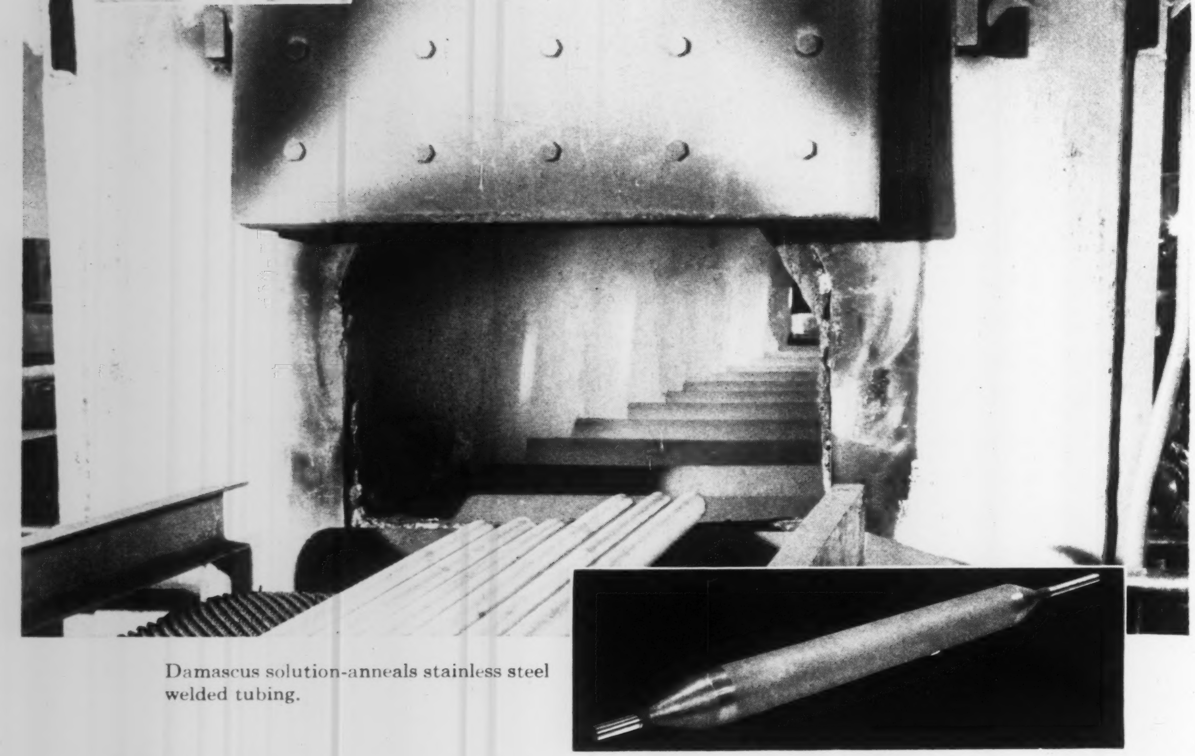
Send for Bulletins describing Shepard Niles Cab and Floor-Operated Hoists. And request our representative to call.

America's Most Complete Line of Cranes and Hoists Since 1903

SHEPARD NILES
CRANE AND HOIST CORPORATION
2388 Schuyler Ave., Montour Falls, N. Y.

"We more than doubled the expected life of our furnace rolls"

Says Mr. B. B. Burd, Chief Metallurgist
Damascus Tube Co., Greenville, Pa.



Damascus solution-anneals stainless steel welded tubing.

"When we installed Thermalloy* cast furnace rolls, we estimated the service life on the basis of operating temperature of 1950° to 2150° F.

After more than double the expected life, our Thermalloy rolls show no sign of wear and are still operating at peak efficiency!

"I feel the chief reason for this successful service is the careful selection of alloys and the design of the furnace rolls.

"We also employ a maintenance program to further extend the life of the rolls. At the advice of Electro-Alloys, we never completely shut down the furnace. On week ends we maintain the temperature at 1400° F. and keep the rolls turning at idling speed. This reduces the temperature gradient and offsets distortion possible when the rolls are not turning."

Whatever *your* heat-treat problems, Electro-Alloys has the experience necessary to help you solve them. Call your representative — or write Electro-Alloys Division, 9042 Taylor Street, Elyria, Ohio.

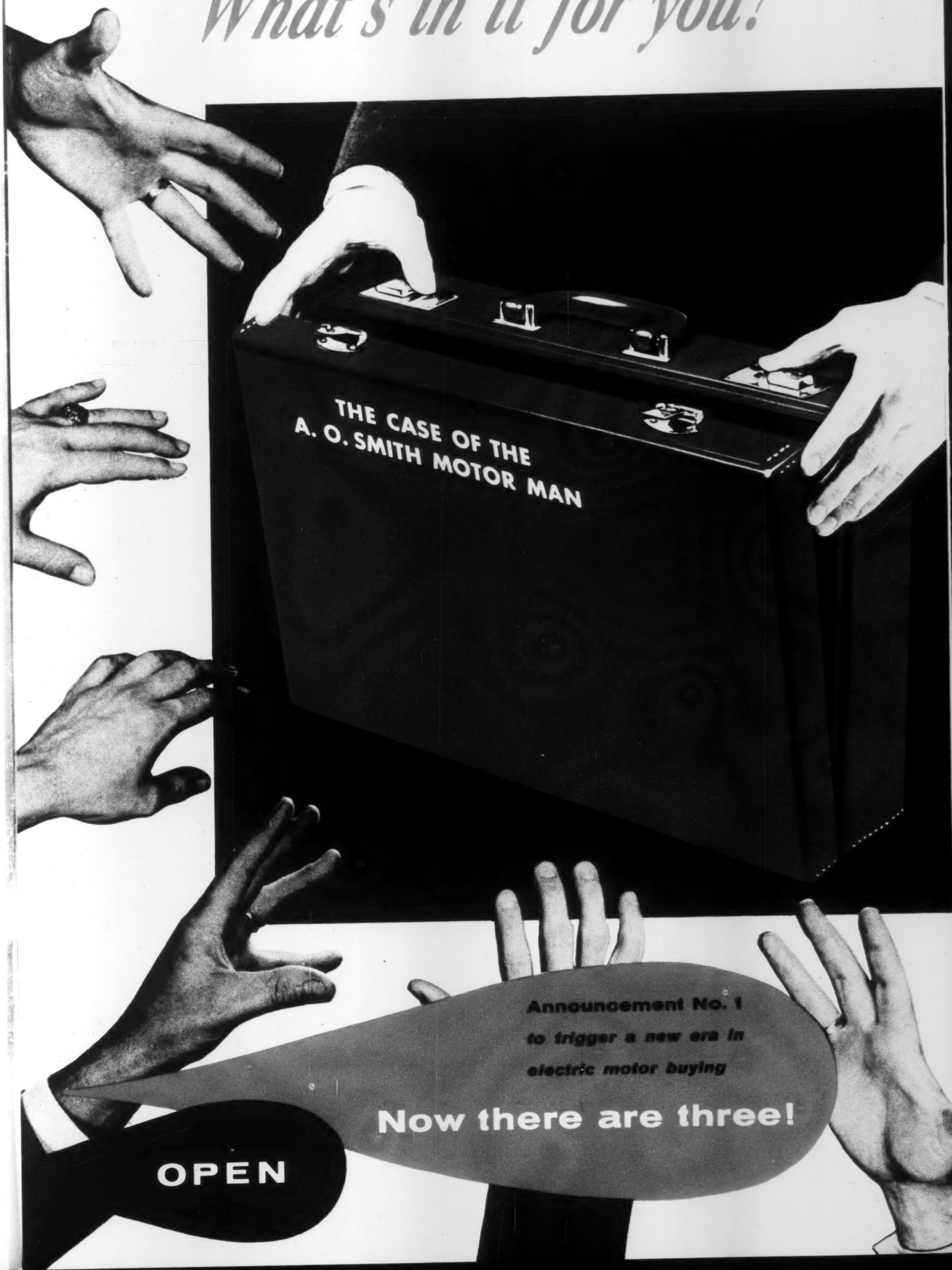
*Reg. U. S. Pat. Off.

AMERICAN **Brake Shoe** COMPANY

ELECTRO-ALLOYS DIVISION Elyria, Ohio

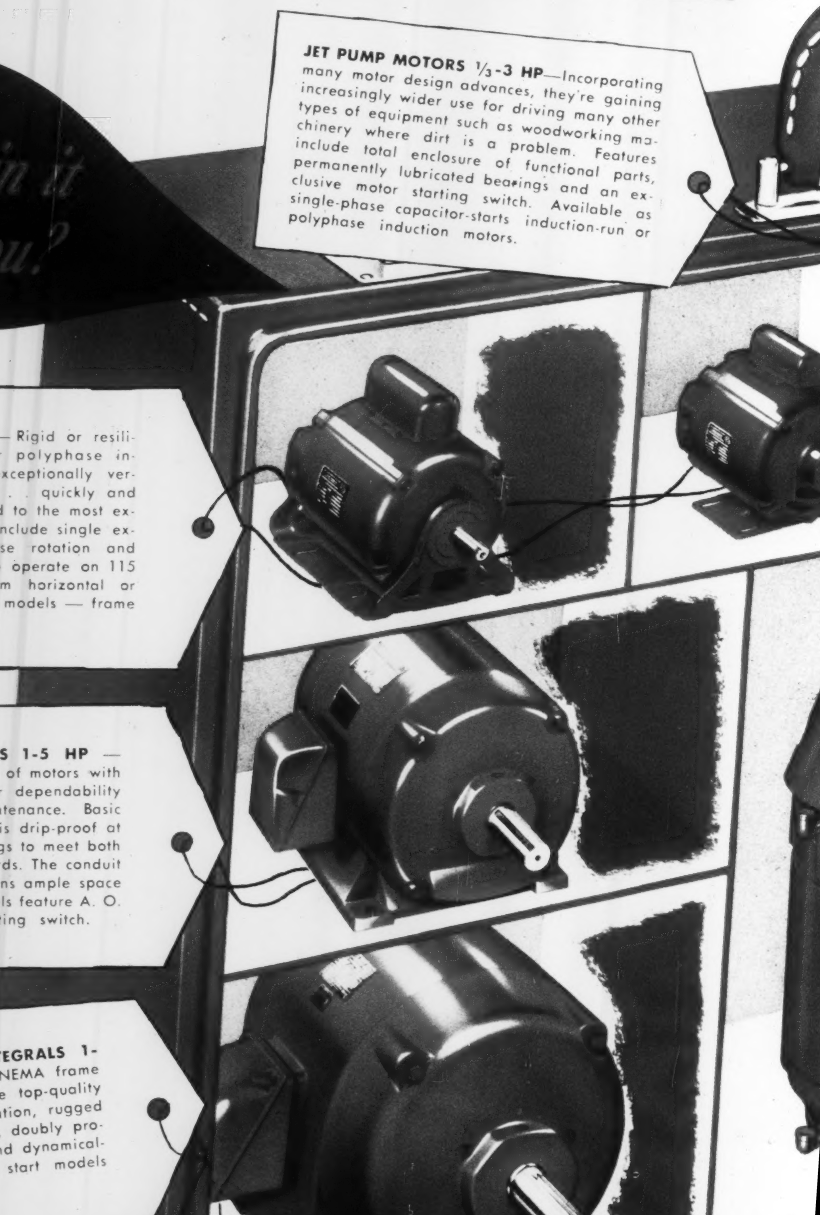
The case of the A.O.Smith Motor Man:

What's in it for you?


THE CASE OF THE
A. O. SMITH MOTOR MAN
Announcement No. 1 to trigger a new era in electric motor buying
Now there are three!
OPEN

The case of the A.O.Smith Motor Man:

What's in it for you?



JET PUMP MOTORS ⅓-3 HP—Incorporating many motor design advances, they're gaining increasingly wider use for driving many other types of equipment such as woodworking machinery where dirt is a problem. Features include total enclosure of functional parts, permanently lubricated bearings and an exclusive motor starting switch. Available as single-phase capacitor-starts induction-run or polyphase induction motors.

FRACTIONALS ⅓- 1 HP — Rigid or resilient base, capacitor-start or polyphase induction motors. All are exceptionally versatile (2,000 std. models) . . . quickly and easily application-engineered to the most exacting demands. Features include single external connection to reverse rotation and motor windings arranged to operate on 115 or 230 volts. Choose from horizontal or vertical, single or polyphase models — frame sizes 56 or 66.

SINGLE-PHASE INTEGRALS 1-5 HP — Here's a general-purpose line of motors with an outstanding reputation for dependability of service and low-cost maintenance. Basic motor has rolled steel frame, is drip-proof at all angles with frame mountings to meet both old and current NEMA standards. The conduit box is full-rotating and contains ample space for lead connections. All models feature A. O. Smith's exclusive sealed starting switch.

POLYPHASE, DRIP-PROOF INTEGRALS 1-800 HP — All current and old NEMA frame sizes available. Features include top-quality insulation, dual-balanced ventilation, rugged cast iron main and end frames, doubly protected bearings, pressure-cast and dynamically balanced rotor. Increment start models available.

In addition, A. O. Smith offers GEARMOTORS 1-60 HP plus any electrical and mechanical modification you may require.

VERTICAL HOLLOW SHAFT MOTORS 1-700
HP — Sturdily built, weatherproof TEFC and
TEFC-XP motors offer scores of features t
insure long-life dependability. They inclu
heavy, cast iron construction, high and ex
high downthrust suitable for momentary
thrust conditions, sealed bearing chambe
easy access for quick, simple inspect
thrust bearing and ratchet. Availab
P and PH bases.

A. O. Smith offers the 3rd full line of electric motors— ⅓ to 800 hp

HERMETICS ¾-100 HP — Each motor is not only manufactured with attention to the smallest detail — it is also assembled and tested under controlled atmospheric conditions and then individually tested (mechanically and electrically) under the toughest conditions imaginable. All models are customer-engineered to your exact compressor requirements. Single-phase models use 115 and 230 volts . . . polyphase motors use 208, 220, 440 and 550 volts.

CLOSE-COUPLED PUMP MOTORS 1-75 HP — Drip-proof, TEFC and TEFC-XP motors specifically designed for all types of centrifugal pumps. Like all A. O. Smith motors, these units are application-engineered to each specific requirement. Modifications can be easily made to provide top-flight performance on different power sources. Frame sizes range from NEMA 182CZ to 445CZ and 203CZ through 445CZ.

TEFC and EXPLOSION-PROOF MOTORS 1-800 HP — These polyphase motors are built with the utmost of care and precision. Available in current NEMA frame sizes 182 through 505 as well as old NEMA sizes. Designed for trouble-free use in process industries, chemical plants, concrete plants and similar rugged-duty applications.

-700
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and extra-
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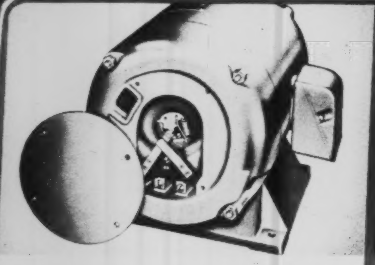
chamber and
inspection of
Available with

Here's complete hp to broaden your buying range

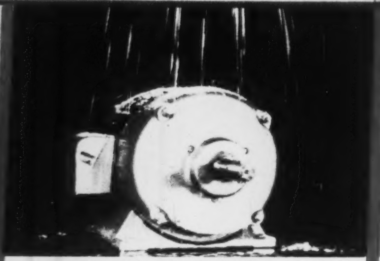
. . . plus exclusive features no other motor manufacturer can match

And in the case of the A.O.Smith Motor Man:

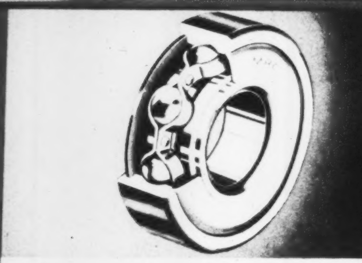
you get features like this:



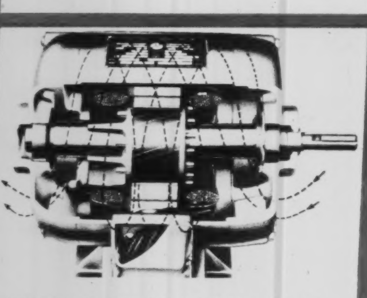
SEALED STARTING SWITCH — Exclusive development . . . totally enclosed in end frame. Keeps foreign matter out, extends life of switch and motor.



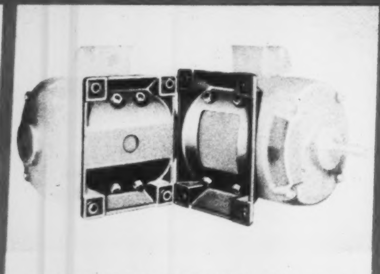
DRIP-PROOF, WEATHER-PROTECTED CONSTRUCTION — suitable for applications formerly specifying splash-proof design. Fully protected even when ceiling or side wall mounted.



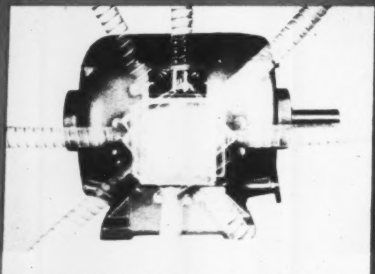
FOOL-PROOF LUBRICATION—Bearings can be greased but can't be over-greased. Construction features include inner shaft seal, self-cleaning action and large grease reservoir.



CONTROLLED THRU-VENTILATION — Cooling system designed for high-volume, low-velocity air to get maximum heat transfer . . . lower operating temperatures . . . longer insulation life.



OPTIONAL FRAME MOUNTINGS — There's no need to change product design to use NEMA frame sizes. A. O. Smith provides mountings drilled to both old and new specifications.



FULL-ROTATING CONDUIT BOX — Can be set at any angle. Designed to save motor space and speed installation. Loosen only three screws to rotate conduit box.

all yours . . . and more in America's 3rd great full-range motor line!

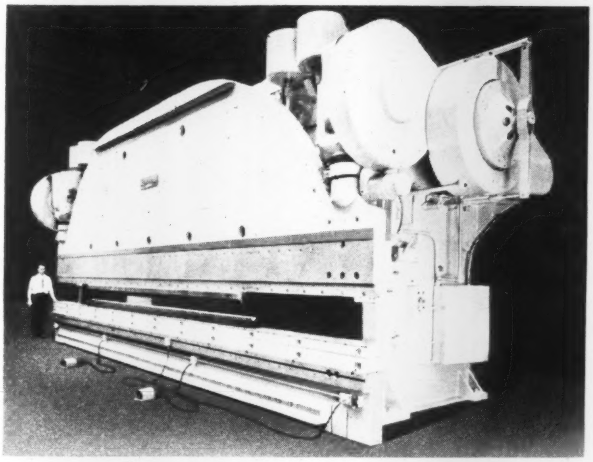
Through research . . . a better way

A.O.Smith
CORPORATION
ELECTRIC MOTORS
TIPP CITY, OHIO
A. O. Smith INTERNATIONAL S. A., Milwaukee 1, Wisconsin

MORE BIG NEWS ON THE WAY...

direct to you from the case of the A. O. Smith Motor Man

WATCH FOR IT!



How press brake construction affects job costs

Only accurate machines can make accurate bends. The accuracy obtainable from a press brake begins with its structural rigidity. Cincinnati Press Brakes give you maximum accuracy and rigidity because of these construction features:

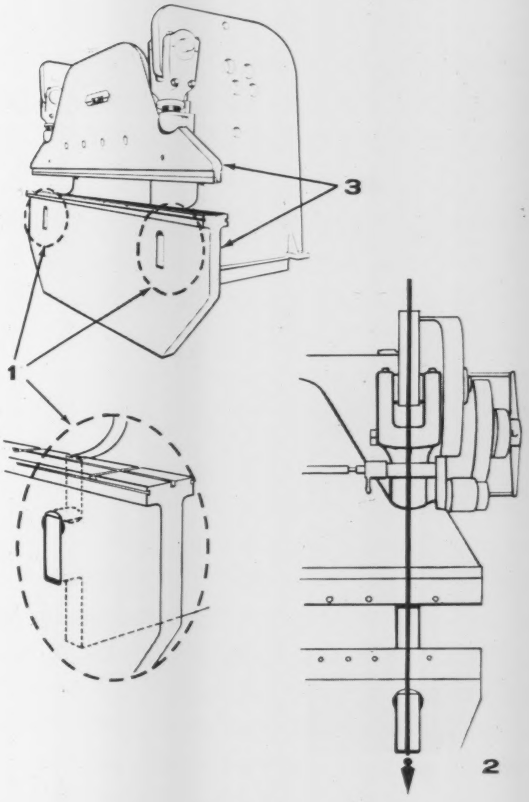
1. Interlocked construction—The bed is supported directly by the housings, by means of hand-scraped bearing shoes. No welds are used as load supports, so every Cincinnati is free from welding strains.

2. Center line loading—Since the Pitmans which drive the ram *straddle* the housings, weaving of the frame and cramping of the ram slides and shaft bearings is eliminated. All operating forces are contained within the housings.

3. Deep beds and rams—It's a simple engineering fact that the rigidity of a press brake's ram and bed increases approximately as the cube of the depth. For this reason, most of the weight of the ram and bed of a Cincinnati Press Brake is disposed in depth, rather than thickness. Tests prove their working surfaces remain parallel within .005″ under capacity loads.

To you these construction features mean money saved in the long run. A Cincinnati Press Brake is more accurate than other makes when you buy it . . . and will stay that way throughout its long life.

Write department C for Catalog B-5.



Shapers / Shears / Press Brakes

THE CINCINNATI SHAPER CO.

Cincinnati 11, Ohio

He proved that 1 wheel could

Jim Frederick's eleven years of experience as an abrasive engineer have covered most of the problems in the book. That's why he so often finds practical solutions when he runs into problems that are *not* in the book.

Steelcraft operator John Kulpa checks performance of new Bay State wheel on high speed steel form tool job. (Guard removed for photography).

outperform 3 at Steelcraft Tool Co.

Steelcraft Tool Co., of Detroit, used to use three different grinding wheels to rough and finish the angles on straight high speed steel form tools . . . one specification for roughing, two for finishing. Then Bay State came into the picture through distributor Jim Frederick of Detroit's Industrial Abrasives Co. He showed them how a single Bay State wheel specification would cut *fast* for roughing and *fine* for finishing.

Result: The new wheel eliminated the need for repeated wheel changes and both Roland Belardnelli, co-owner of Steelcraft, and John Kulpa, chief operator, rate it A-plus for speed and precision, too.

Why not talk to *your* Bay State distributor? Chances are he'll come up with more than one cost-saving idea for your grinding operations.

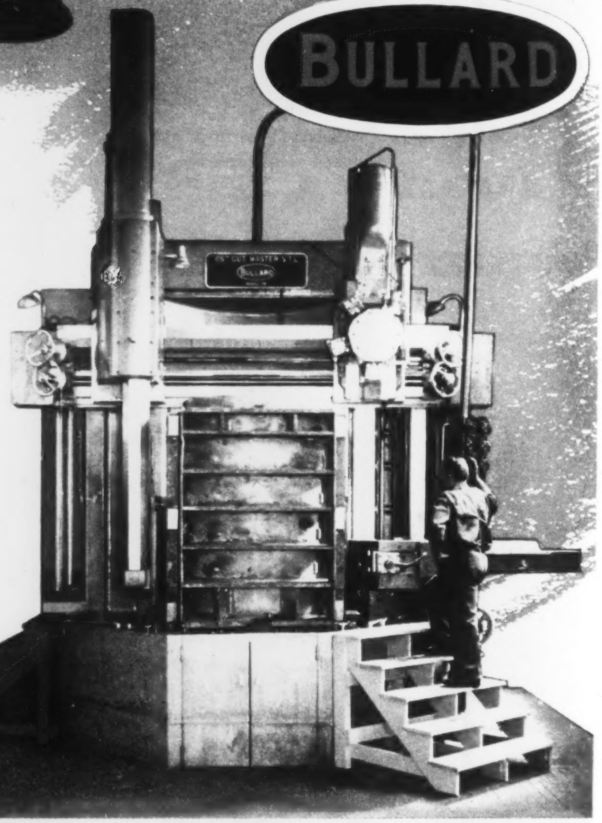
Better grinding at lower cost – that is his business.

BAY STATE ABRASIVES

Bay State Abrasive Products Co., Westboro, Massachusetts.
In Canada: Bay State Abrasive Products Co., Brantford, Ontario.
Branch Offices: Bristol, Conn., Chicago, Cleveland, Detroit, Pittsburgh. *Distributors:* All principal cities.

are You interested in PROFIT DEVELOPMENT

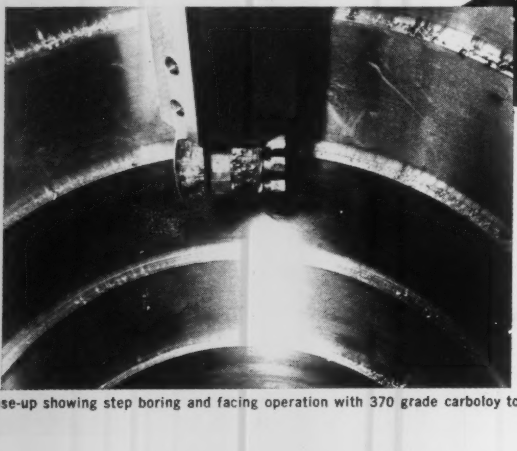
through reduced machining time and *Lower Costs . . .*



The new 66" Bullard Cut Master, Model 75 purchased by E.D. Jones & Sons Co., Pittsfield, Mass., has reduced from 65 to 48 hours the machining time required for a 4,000 lb. stainless steel piece used in a paper-making machine.

The Bullard Cut Master V.T.L., Model 75 line offers many features and advantages to help you — cut costs when cutting metal.

The part, 68" high, formerly had to be machined in three operations. Now, with an extension on the 62" Ram, a table speed of 9.6 r.p.m., feed of .0208 and 1/8" depth of cut, it is possible to machine the entire depth in one operation.

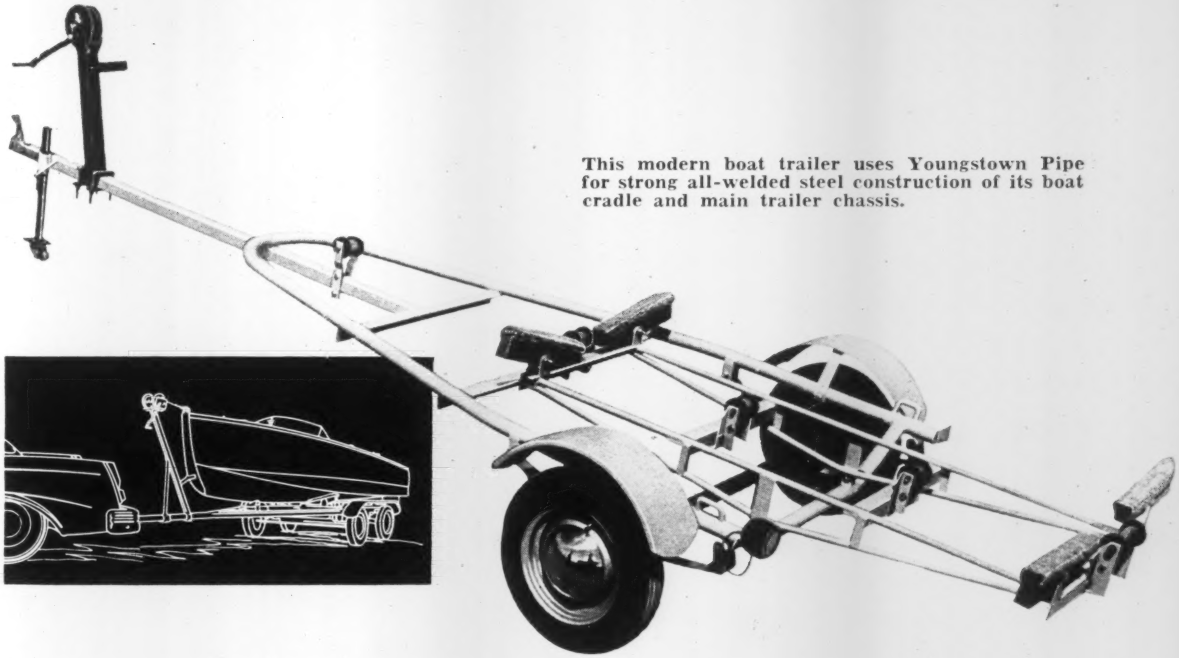


Close-up showing step boring and facing operation with 370 grade carboloy tool.

Complete details are available from your nearest Bullard Sales Office or Distributor or write

THE BULLARD COMPANY

BRIDGEPORT 9, CONNECTICUT



This modern boat trailer uses Youngstown Pipe for strong all-welded steel construction of its boat cradle and main trailer chassis.

YOUNGSTOWN CONTINUOUS WELD PIPE

. . . provides extra-strength chassis for "Texan" boat trailers

Here's an unusual application for steel pipe. "Texan" Boat Trailers, produced by the Cunningham Trailer Works of Lubbock, Texas, are fabricated from Youngstown Pipe to provide users maximum cargo protection as well as greatest ease during loading, unloading and while making the haul.

In line with Cunningham's policy of using only the highest quality raw materials, they wisely specify Youngstown Continuous Weld Pipe for fabrication of both the boat cradle and main trailer chassis. This gives Texan boat trailers a sturdy welded steel construction able to withstand the most rugged use—on or off the highway. Why not use Youngstown Pipe structurally to build strength and quality into your products?

Your local Youngstown Distributor is the man to call when you want quality pipe—day or night. He has a complete stock and his on-the-spot fast delivery will help keep your operations humming along at top speed. Why not call him today?

Next time you need pipe—for any purpose—specify Youngstown and secure these 7 Points of uniform goodness

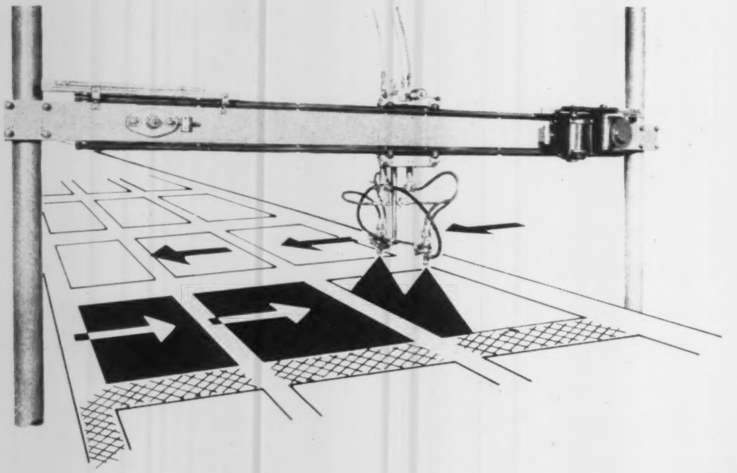
- uniform ductility
- uniform lengths
- uniform threading
- uniform weldability
- uniform wall thickness and size
- uniform strength and toughness
- uniform roundness and straightness

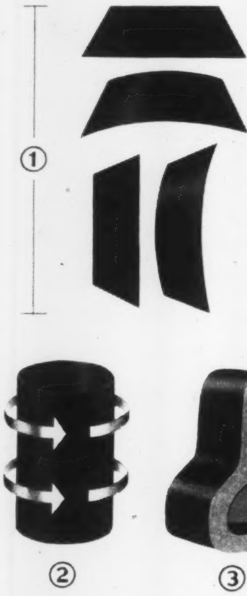
QUALITY YOUNGSTOWN SERVICE

THE YOUNGSTOWN SHEET AND TUBE COMPANY
Manufacturers of Carbon, Alloy and Yoloy Steel
General Offices - Youngstown 1, Ohio
District Sales Offices in Principal Cities

DEVILBISS AUTOMATICS...

a cost-saving answer to coating problems





DeVilbiss Automatic Spray Machines, in three basic types, feature speed of application and uniformity of finish not possible by any other coating method. (1) Automatic Transverse Machines coat flat or contoured shapes on horizontal or overhead conveyors. (2) Automatic Rotary Machines spray all types of small shapes with ultra-fast drying material. (3) Automatic Chain-On-Edge Machines spray all types of irregular shapes inside and out.

You can increase rate of production, improve quality of your work, and reduce costs to fraction of manual methods!

DEVILBISS

ND

NEWCOMB-DETROIT

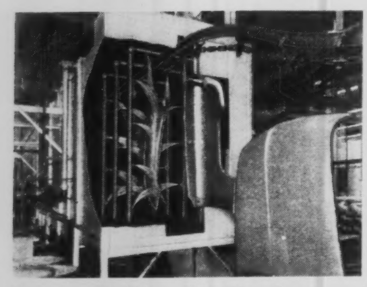
Complete mechanization with DeVilbiss Automatics eliminates variation of manual operation and boosts production—in many cases 500% or more.

Gun positions are precisely set to coat your product quickly, uniformly, with accurate lapping and minimum overspray.

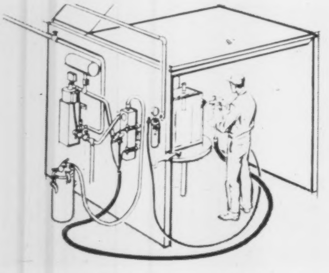
This precision means greater uniformity of spray-applied film; assured uniformity of color, luster, and texture of finish. Use of materials is carefully established and maintained; rate of production is constant.

What's more, you can know in advance whether automatic painting is practical. We will test-run your product in the DeVilbiss Laboratory without charge or obligation. Call our nearest branch office; or write us direct for Series I-8000 Bulletins on automatic spraying.

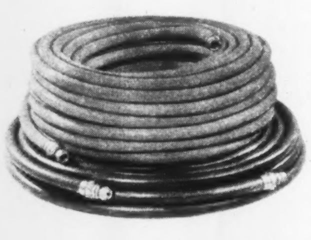
THE DEVILBISS COMPANY, Toledo 1, Ohio • Barrie Ontario • London, England • Branch Offices in Principal Cities



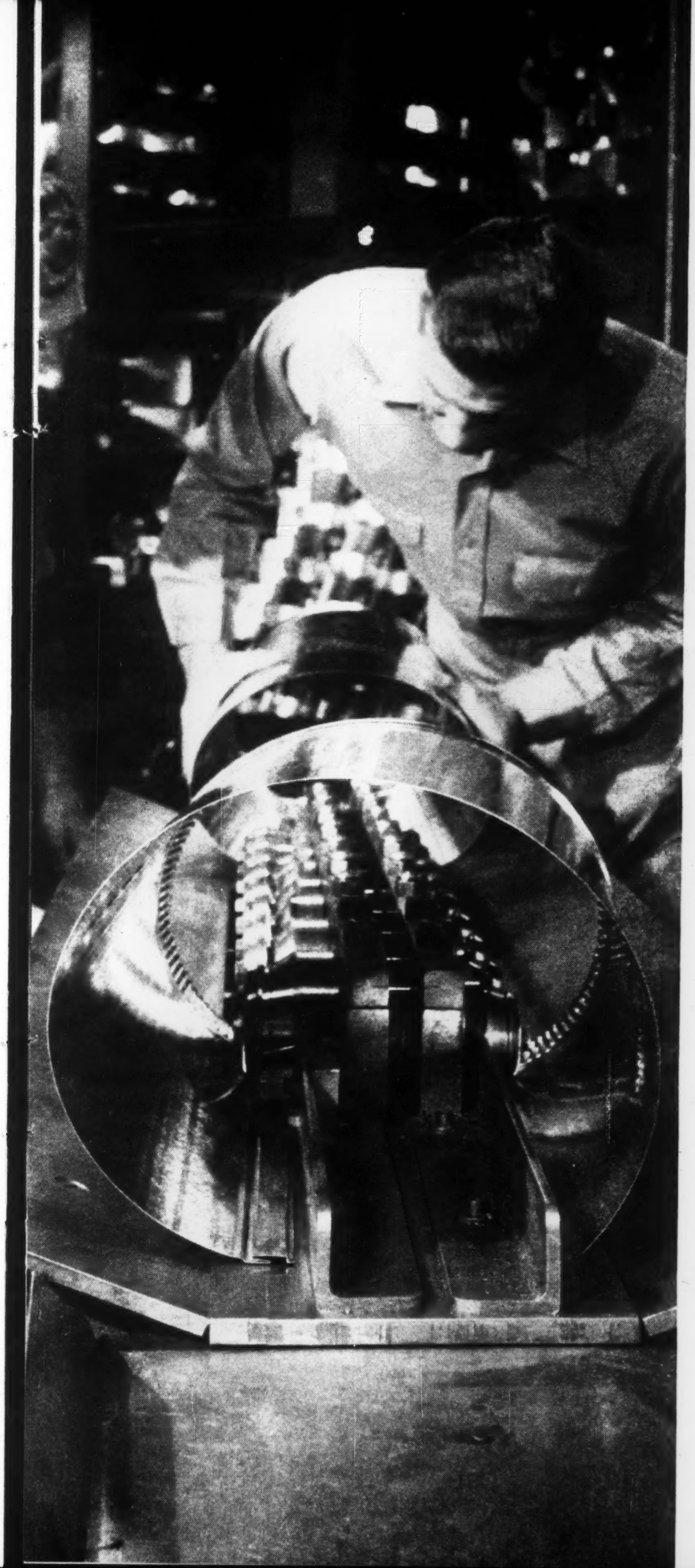
Newcomb-Detroit Flo-Coaters. Save manpower and floor space in prime- or single-coat applications. *Write, stating requirements.*



DeVilbiss Hot Spray. Provides heavier film build, with faster drying, less overspray, and fewer rejects. *Send for Bulletins IE-114B and F-286.*



DeVilbiss Fluid Hose. Unsurpassed for resistance to solvents, oils. Flexible, kinkproof. Full line of connections. *Send for Catalog IE-E.*



"We just don't worry about chipping or flaking when we lock-seam WEIRKOTE®!"

If those difficult lock-seaming operations give you trouble, it's time to take the step that leading manufacturers everywhere are taking.

Switch to Weirkote zinc-coated steel as promptly as you can.

Weirkote's continuous process integrates the zinc and the steel so that the most complicated short-radii bends are made without chipping or flaking. Weirkote can be worked to the very limits of the steel itself — spinning, deep drawing, crimping, heading, twisting, the works. Comes through in perfect shape to give your products lasting anti-rust protection, such as they've never had before.

Weirkote's made that way to behave that way. And *now* it's treated to inhibit wet storage (white oxide) stain.

Can you think of a quicker, easier step to an even better product? To fewer rejects? To more peace of mind? To lower costs? And, perhaps most important, to the greater good will of customers who receive even more value for their money?

Write today for the free booklet that will give you lots of food for thought on the many advantages Weirkote can bring to your products and production. Weirton Steel Company, Dept. B-1, Weirton, West Virginia.

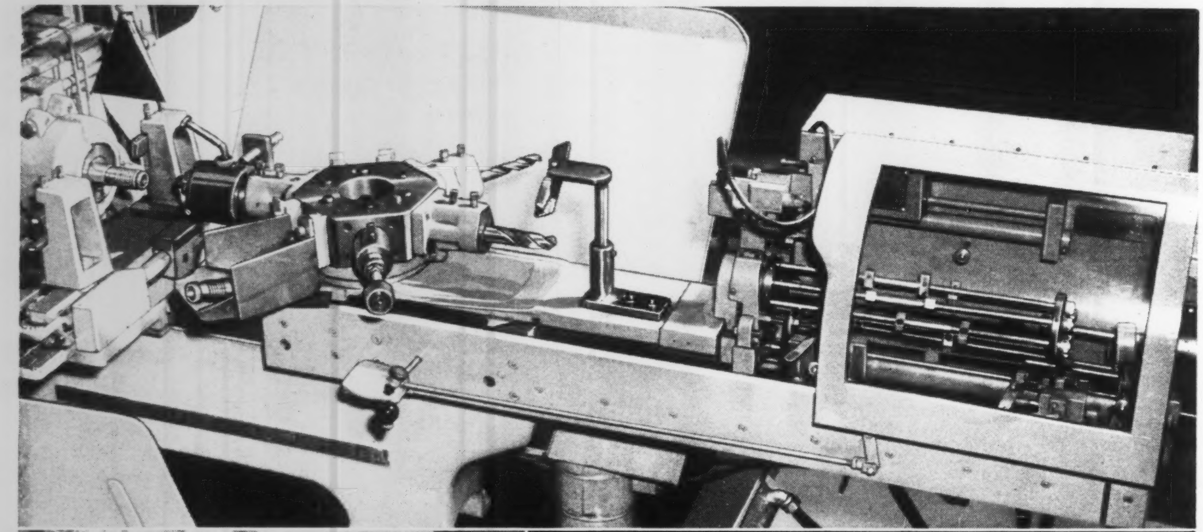
WEIRTON
STEEL
COMPANY

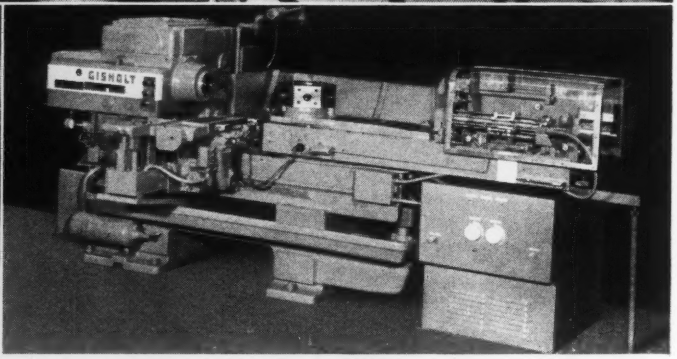
WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

a division of

NATIONAL STEEL CORPORATION





250% Production Increase with this setup

Gets full automation on small job-lot production runs using hydraulic drive on Gisholt Ram Type Turret Lathe

Floor-to-floor time on the job shown here—a threaded collar $3\frac{1}{8}''$ long with $1\frac{11}{16}''$ diam.—was cut from 8.1 minutes (with hand operation) to just 3.25 minutes. All operations and machine functions are automatically controlled with the Lynn Hydraulic Drive Unit on a Gisholt Ram Type Turret Lathe.

Here's how the finished workpiece is completely machined from bar stock in one fast, automatic operation: The stock is fed pneumatically against a turret stop, chucked, start-drilled, then finish-bored with a large drill. The hydraulic drive backs the drill out automatically to clear the chips, then rapid traverses back to where it left off before dropping into feed to resume drilling. Spindle speed automatically decreases as tools on the front cross slide form the O.D., drops into lower speed as O.D. is threaded, and into another low speed as radii are formed on the finished part and on the end of the bar stock. A tool on the rear cross slide cuts off the finished part and the job is done in record time.

With its massive design, reserve power and extra spindle speeds, the new Gisholt MASTERLINE Ram Type Turret Lathe is particularly adaptable to complete automatic operation with Lynn Hydraulic Drive. Contact your Gisholt Representative. He has the complete facts—and his wide experience may point the way to more profitable operation for you.

MASTERLINE
GISHOLT SINCE 1887
GISHOLT

GISHOLT
MACHINE COMPANY
Madison 10, Wisconsin, U.S.A.

WRITE GISHOLT TODAY for all-new, 18-page illustrated Bulletin 1174-B covering features, accessories, tools and floor plans on new Gisholt MASTERLINE Ram Type Turret Lathes.

ASK YOUR GISHOLT REPRESENTATIVE ABOUT GISHOLT FACTORY REBUILT MACHINES WITH NEW MACHINE GUARANTEE

call KE for plant expansion or new facilities

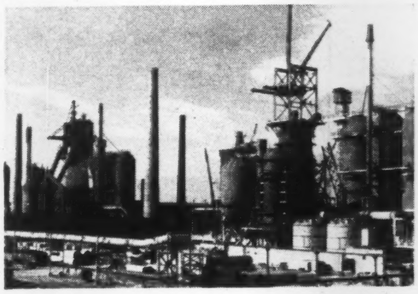
call KE for plant expansion or new facilities

call KE for plant expansion or new facilities

call KE for plant expansion or new facilities

INGENUITY

has made KE a major engineer-contractor serving Steel



At India's mammoth Tata works, at Jones & Laughlin, at Kaiser Steel—Kaiser Engineers' ingenuity advances the art of making steel.

KE can take your development thoughts from a gleam in your eye through start-up. KE performs any part—economic analysis, plant location, engineering, design, procurement, expediting, construction. One contract can cover all.

For your next plant or expansion, take advantage of KE's cost-saving ingenuity and wide experience in Steel.

KAISER ENGINEERS engineers—contractors
Contracting since 1914

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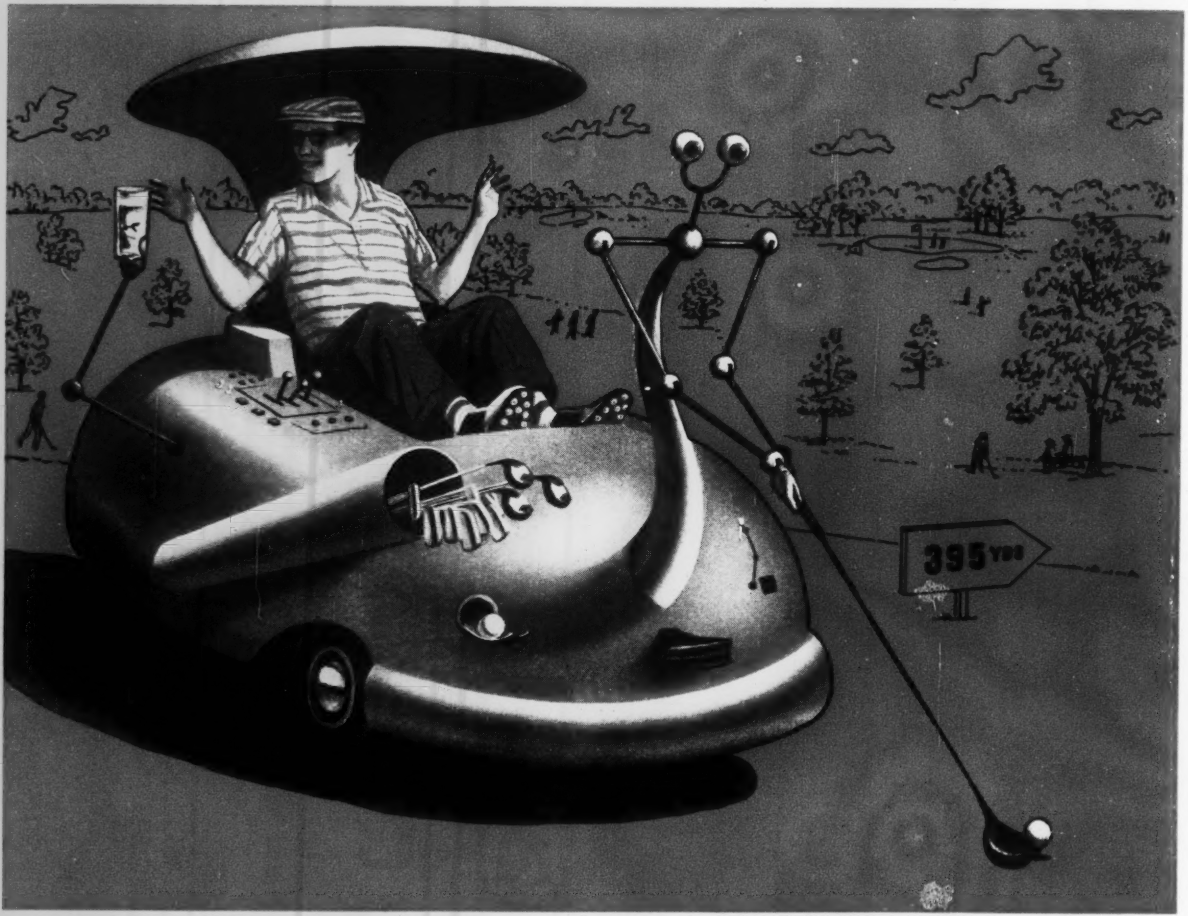

No matter what you make from cold rolled steel

An ALAN WOOD Representative can help!

Designed for the golfer who likes to goof . . . off. But before you produce the "Golf-Master", you had better find out about cold rolled steel from your A.W. Representative. He is the man to see in every case! Your A.W. Representative may order a metallurgical study of your problems and bring about savings that build new profits and greater potential. He can provide you with the latest information on cold rolled steel and its application, plus experienced advice on the gauge, size and type to order. Call him today. Your A.W. Representative is always available . . . never out of touch with your location.

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steelmasters for more than a century and a quarter • *CONSHOHOCKEN, PA.*

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By eliminating the conventional pitman, Erie's new mechanical forging press is rugged, more rigid, and more compact. Guiding is unusual, too.

You are invited to see this press in operation at the Erie Foundry plant. Please call or write Mr. Claude L. Boring, General Manager, for an appointment.

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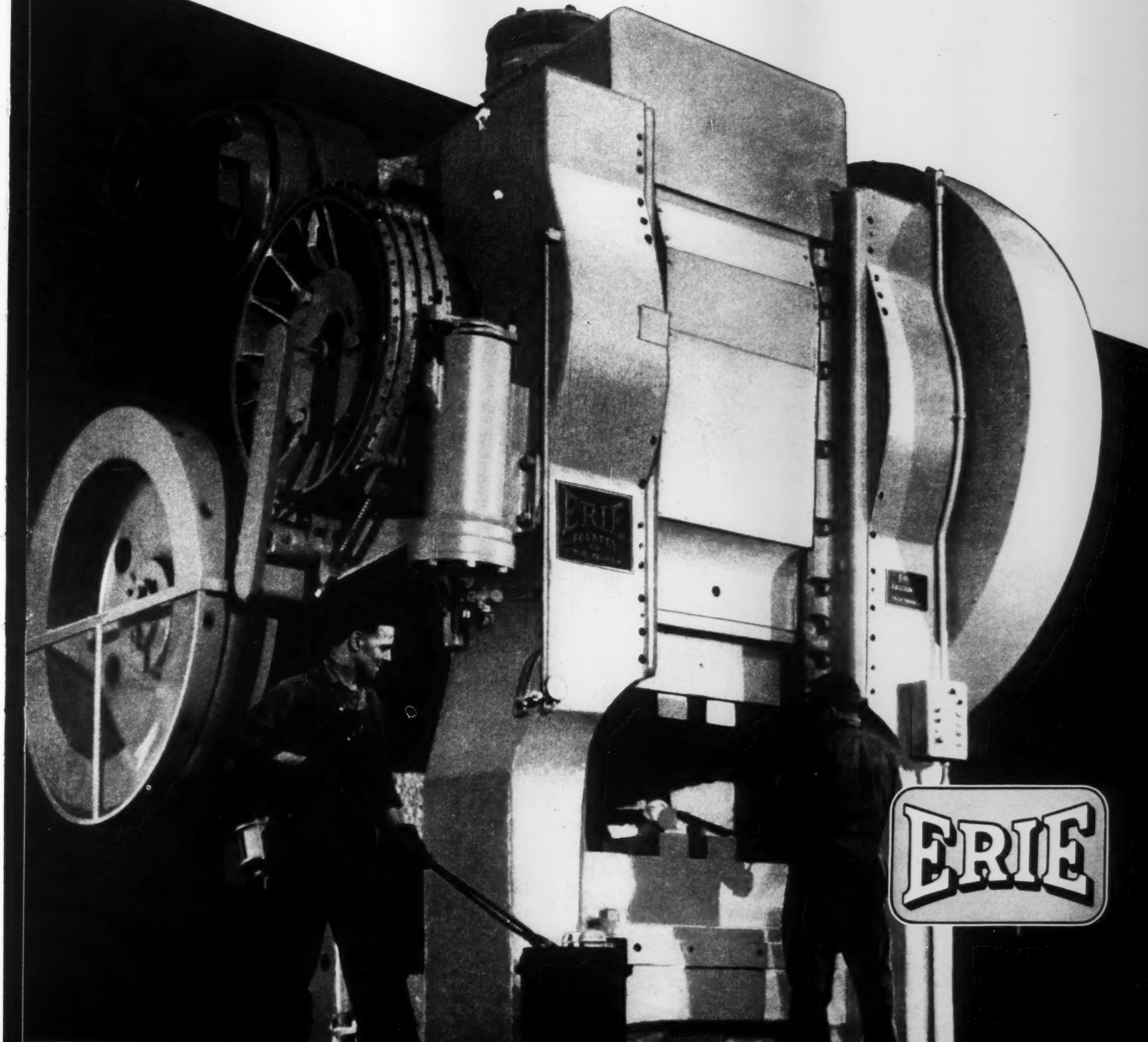

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ARC WELDING AT WORK CUTTING COSTS

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Improved Fleetweld 47 gives that fast, easy operation . . . yet it isn't limited to the flat position.

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Try Improved Fleetweld 47 on your next flat and uphill production job. You'll love it too! It conforms to AWS E-6013 and E-6014.

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Lincoln men who know Weldynamics will help you establish procedures, select equipment and electrodes for most efficient, low-cost welding.

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NEW IL BOND Snagging Wheels

MAKING SMOOTH GOING OF ROUGH GRINDING

SIMONDS
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A126 T7 BIL
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For rough snagging on swing frame, floor stands and portable grinders

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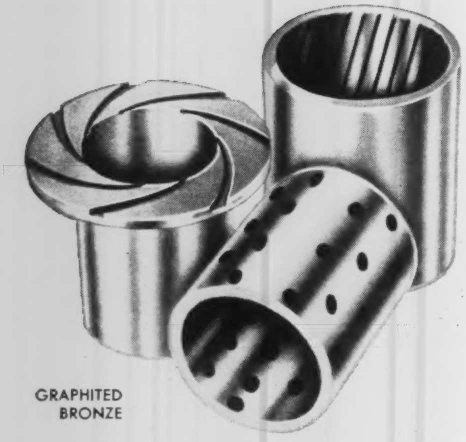

GRAPHITED
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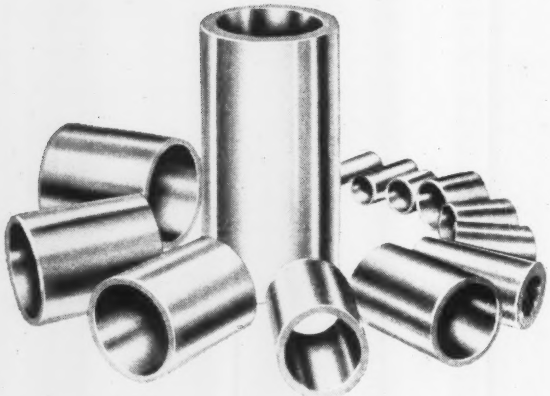
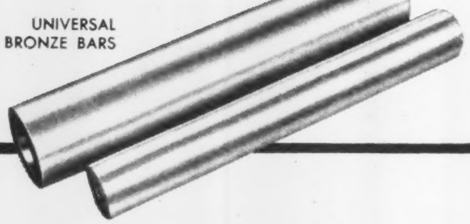


GENERAL PURPOSE



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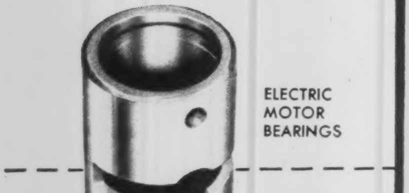

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Johnson Bronze can supply over 1900 sizes and types of sleeve bearings, and over 400 sizes of bronze bars from stock. This includes standard stock GP bearings, graphited bearings, Ledaloyl self-lubricating bearings, and electric motor bearings made to motor specifications. You can select an economical standard bearing for almost any application from this large stock. For complete details on how Johnson Bronze stock bearings can save you money, contact your Johnson distributor.

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MORE OF THE GARLOCK 2,000

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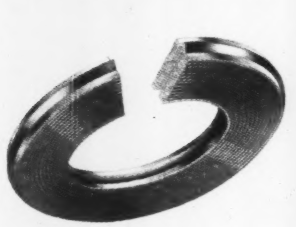
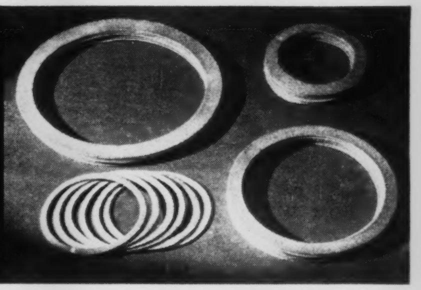


TRY GARLOCK SPIRAL-WOUND GUARDIAN* GASKETS

OR

GARLOCK FOLDED ASBESTOS GASKETS



Garlock Spiral-wound Guardian Gaskets provide safe, positive sealing at temperatures to 1050° F. and pressures to 2500 psi. . . . and under lighter bolt loads, too! They are recommended for sealing against oils, steam, gases, liquids and most chemicals. In no other type gasket can you vary the compressibility to meet different requirements. They are constructed of spiral wound strips of V-shaped metal alternated with layers of asbestos paper or Teflon. Type metal and filler depend upon application. Ask for folder AD-104.

Garlock Folded Asbestos Gaskets are recommended for use against steam or gases to 600° F. where surfaces are irregular or pitted. They are most commonly used on boiler manholes and handholes, or on flanged joints of column stills or other equipment requiring a soft gasketing. Made of wire-inserted asbestos cloth, specially treated to withstand high temperatures, the gaskets are folded, formed and pressed to produce any desired shape.

Guardian Gaskets and Folded Asbestos Gaskets are just two more examples of the famous "Garlock 2,000" . . . two thousand styles of packings, gaskets, and seals for every need. The *only* complete line. You can ask your local Garlock representative for his unbiased recommendations. Or, write for Gasket Folder AD-162.

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THE GARLOCK PACKING COMPANY, Palmyra, N.Y.

For prompt service, contact one of our 30 sales offices and warehouses throughout the U.S. and Canada.

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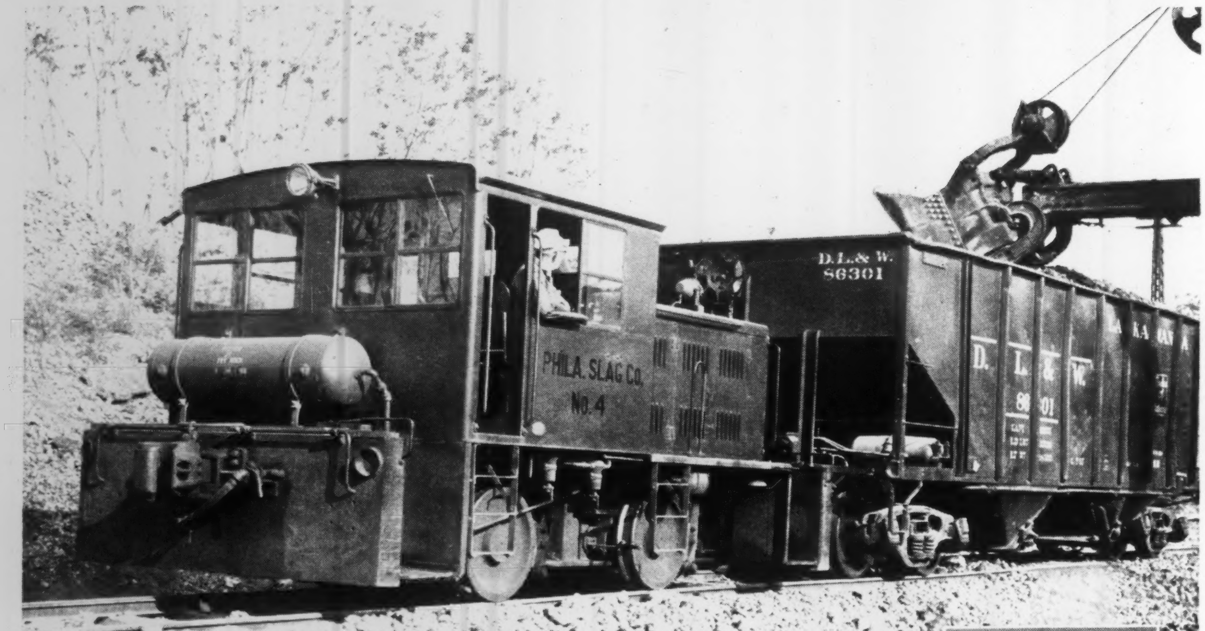

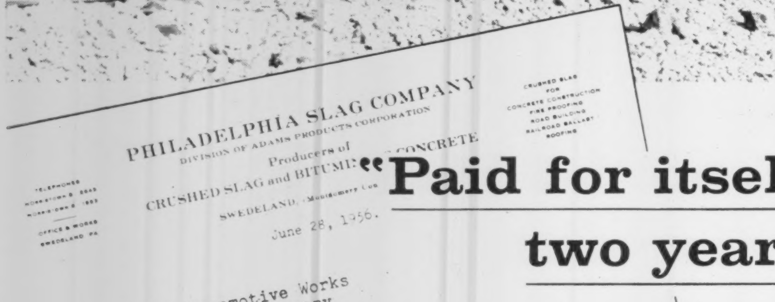

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DIVISION OF ADAMS PRODUCTS CORPORATION
Producers of
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CRUSHED SLAG
FOR
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June 28, 1956.

Plymouth Locomotive Works
Fate-Root-Heath Company
Plymouth, Ohio

Gentlemen:

In February of 1954, we put into service a 35-ton Plymouth Diesel Hydraulic Locomotive, to haul battleship cars of slag from the slag bank to our plant. This locomotive replaced a 70-ton six wheel steam locomotive.

The Plymouth Diesel has done our work most satisfactorily and at a great saving in the cost of operation. The steamer required 3 to 5 tons of coal per day, while the Plymouth Diesel, doing the same work as the steamer, consumes approximately 75 gals of fuel per week.

The savings effected by the use of the Diesel to date, have equalled the cost of the new locomotive. We are very well pleased that we made the change from steam to Plymouth Diesel.

Yours very truly,
Robert F. Peters
Robert F. Peters, Supt.

"Paid for itself in two years operation"

Plymouth Torqomotive half as big as former locomotive

Hauls same loads but saves over $1000 in fuel monthly

Pays for itself in 28 months

Maybe a Plymouth can do the same for *you*. Find out. Send a brief outline of your haulage needs for recommendation. Address: Plymouth Locomotive Works, The Fate-Root-Heath Company, Dept. A-1, Plymouth, Ohio.

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When you buy Roebling Hose Reinforcing Wire it is delivered to you on no-charge spools that mean savings to you.

This modern method of packaging does away completely with deposits and the bookkeeping involved; it contributes, too, to lower freight costs. Thus, you avail yourself of a precision-made and quality controlled product, without any handling, shipping and inventory inconveniences.

Roebling Hose Reinforcing Wire, used for braiding reinforcement, is produced in a complete range of sizes. Write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

Roebling . . . Your Product is Better for it

ROEBLING

Branch Offices in Principal Cities
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Subcontract this part of your production profitably . . . confidently

Now you can employ the nationally known facilities, experience and craftsmanship of The Morgan Engineering Company to produce components for *your* products. Whether you require quantities of small precision weldments or parts weighing up to 80 tons, you can subcontract this part of your production profitably . . . confidently.

Facilities include a complete line of positioning and automatic welding equipment . . . a 20 x 18 x 52 foot stress-relieving furnace . . . modern shot blast equipment and a wide range of machine shop facilities.

Inspection of the Morgan plant is welcomed. Write, wire or phone for complete data on facilities . . . or ask a Morgan sales engineer to call.

THE
MORGAN
ENGINEERING CO. *Alliance, Ohio*

Overhead electric traveling cranes, gantry cranes, open hearth special cranes, plate mills, blooming mills, structural mills, shears, saws and auxiliary equipment.

Here's what U. S. Steel Supply's ANY STEEL ANYWHERE ANY TIME SERVICE means to Specification Steel Corp.

"U.S. Steel Supply Service has helped us CUT INVENTORY COSTS 70%"

says **Ray N. Stephens,** *president and general manager,*
Specification Steel Corporation

"We have reduced our on-hand inventory more than 70% by dealing with U. S. Steel Supply," says Mr. Ray N. Stephens, president and general manager, Specification Steel Corporation, Colton, California.

"Two years ago we maintained an on-hand inventory of 630 tons of assorted shapes and sizes of structural steel, plus considerable sheet and bar stock," says Mr. Stephens. "This space-eating inventory required a huge investment of over $100,000, which meant that less working capital was available for plant expansion and efficient production.

"Because of U. S. Steel Supply's ability to deliver what we want . . . when we want it," continues Mr. Stephens, "we now carry less than 30% of our former inventory—and the working capital, previously tied up in plant inventory, has been channeled into increased production facilities and accounts receivable requirements."

Steel fabricators, such as Specification Steel Corporation, have found that by using ANY STEEL, ANYWHERE, ANY TIME SERVICE it is actually *less expensive* to buy from U. S. Steel Supply.

Here's how to put this service to work for you!

Your steel needs, regardless of your location, can be handled immediately and accurately by U. S. Steel Supply's ANY STEEL, ANYWHERE, ANY TIME SERVICE. You'll get money-saving, time-saving and problem-solving benefits when you deal with U. S. Steel Supply, *plus* the invaluable experience of our technical people and our sales representatives.

If you want one of our representatives to help you plan for new efficiency, new economy and new profitability in your future steel buying, write to U. S. Steel Supply at the address listed below.

U. S. STEEL SUPPLY
DIVISION

Mailing Address:
P. O. Box 1099, Dept. D2, Chicago 90, Ill.

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UNITED STATES STEEL

Quantity

PRODUCTION

of

GREY IRON CASTINGS

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ONE OF THE NATION'S
LARGEST AND MOST MODERN
PRODUCTION FOUNDRIES

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ESTABLISHED 1866

THE WHELAND COMPANY

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Why shouldn't we be interested IN PARTNERSHIP INSURANCE?

Fashion show

**"After all,
we know the future
of our families
may depend upon it."**

By law, the death of a partner means the total dissolution of the partnership organization. It could bring business activity to a complete standstill.

The result: possible financial chaos to the business and extreme hardship to the families involved.

Ætna Life's Business Planning Service can help prevent this . . . can provide in advance for a smooth and orderly transfer of the business.

Thoroughly trained representatives in 91 agencies from coast to coast are ready to help you and your attorneys through Ætna Life's unusual Business Planning Service.

ÆTNA BUSINESS LIFE INSURANCE PLANS ARE SPECIALLY DESIGNED . . .

- To preserve PARTNERSHIP values when death comes to any partner.
- To preserve SOLE PROPRIETORSHIPS for heirs or selected employees.
- To preserve ownership values when death comes to any stockholder in a CLOSE CORPORATION.
- To indemnify any firm for the death of a KEY MAN.

Add Life to your Business with Ætna Business Life Insurance

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Affiliates:
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**Ætna Life Insurance Company
Hartford 15, Connecticut**

Gentlemen:

Please send me a copy of your new business life insurance booklet "Will This Man Take Your Business With Him When He Dies?"

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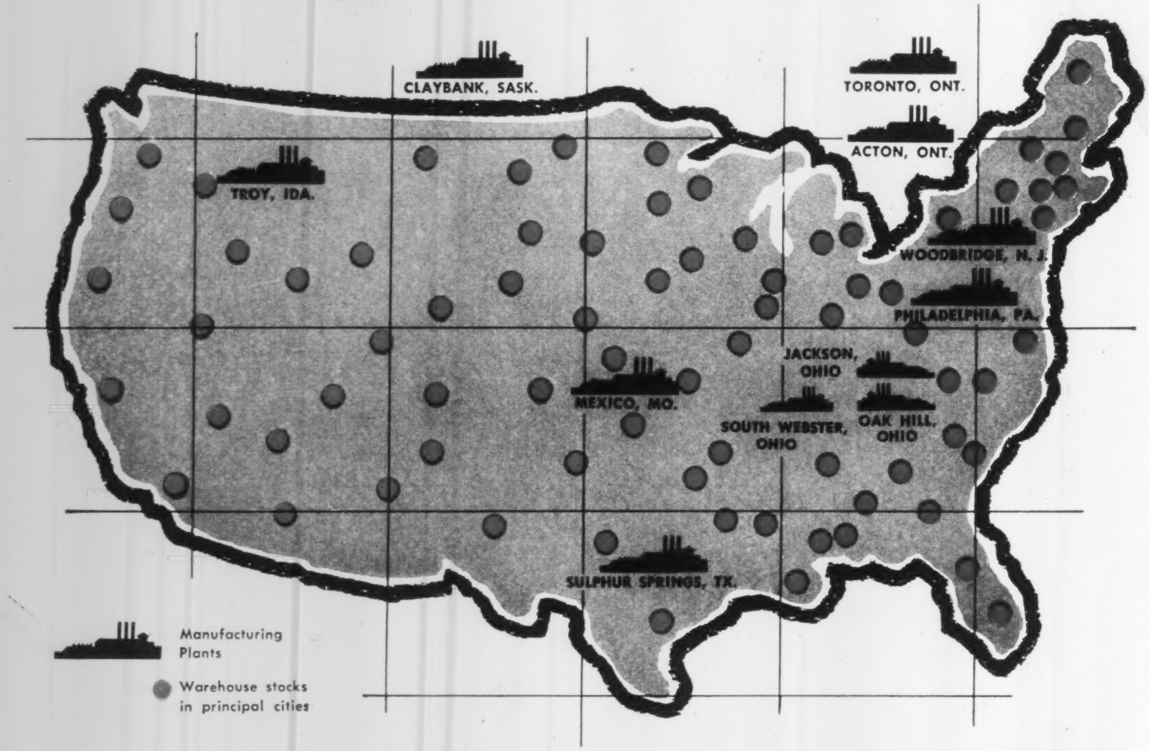
REFRACTORY PRODUCTS
SERVE THE WORLDS INDUSTRIES

manufacturing and warehouse facilities strategically located to save you time and costs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11 A. P. Green manufacturing plants and warehouse stocks conveniently located throughout the United States and Canada, Save You Money 7 Ways.

- Lower Shipping Costs . . . from nearby manufacturing or warehouse point.
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Improve your Products with . . .
J L
STAINLESS
STEEL
BAR · WIRE · BILLETS

The superior quality of J & L Stainless Steel makes fine products finer. Our inventory of stainless bars in a large range of sizes and grades is available for immediate shipment. Write or call the J & L Stainless Steel Division in Detroit for your copy of the latest stock lists.

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Improve your Products with . . .
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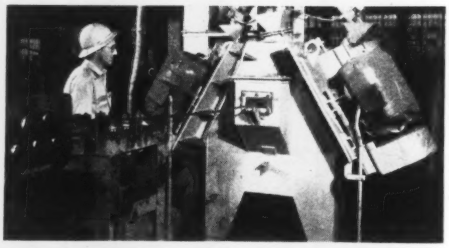
STEEL BAR · WIRE · BILLETS

DUNKING IS NOT FOR STEEL ROD

Wheelabrator® abrasive blast descaling automates wire drawing and processing lines

Through application of Wheelabrator blast descaling, it is now possible to clean, coat, draw, and cold head in one continuous operation and secure the following advantages:

* Strand cleaning and coating ahead of cold drawing
* Faster, more uniform cleaning
* Superior finish for coating and die lubrication
* Elimination of multiple handling of hot rolled coils



These cost-cutting Wheelabrator advantages are already being obtained by prominent producers of wire products in descaling various size rod at speeds up to 600 f.p.m. New applications in the wire products field are constantly being developed. It will pay you to investigate the Wheelabrator for your cleaning problems. Write today for complete information.

Send for Bulletin No. 148-D

WHEELABRATOR
CORPORATION
509 South Byrkit Street, Mishawaka, Indiana
Canadian Offices: Scarborough (Toronto) – Montreal

We can help you "fit" **WIRE CLOTH** *to your needs*

These days, "fit" is an appropriate word when it comes to matching wire cloth to industrial needs—especially when you do business with the *Reynolds Wire Division* of National-Standard. Here's why . . .

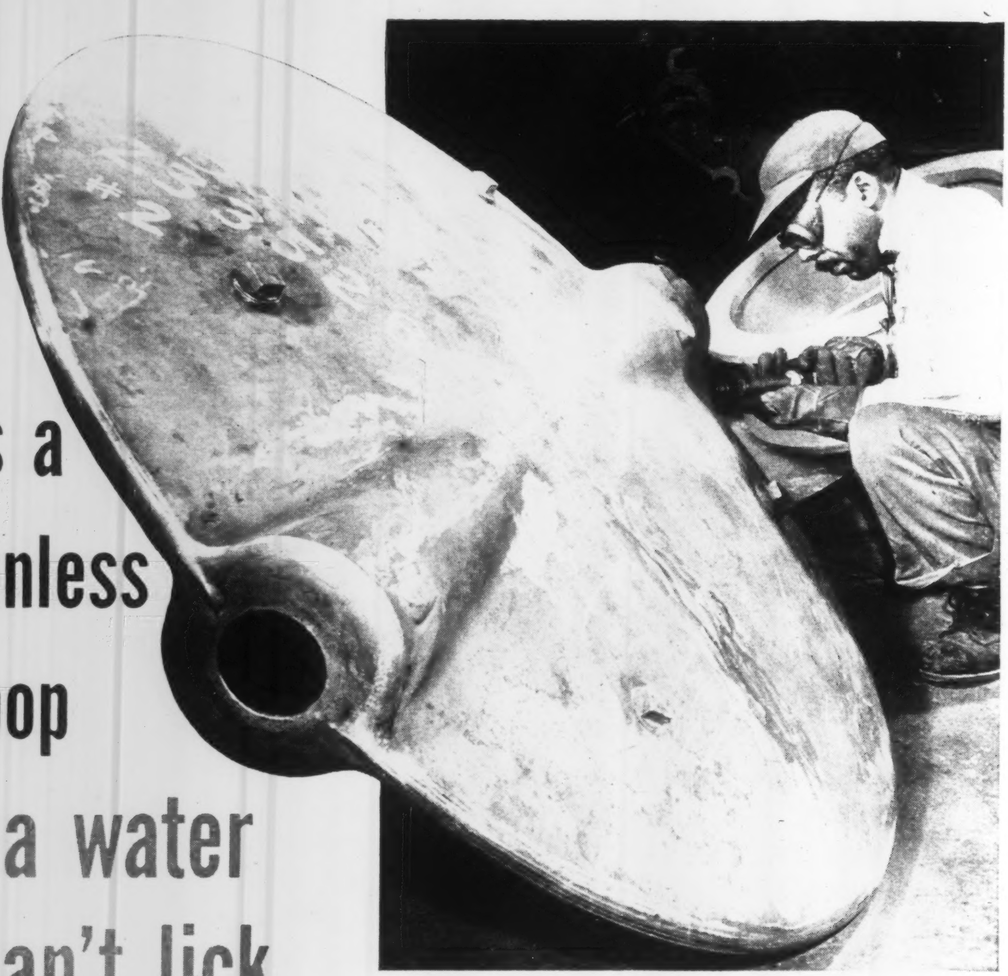
First, there are of course the many different weaves, meshes, metals, finishes and coatings that provide for infinite combinations to meet any special requirement right on the nose.

Secondly, and highly important, Reynolds also "tailors" wire cloth to the precise *width* and *length* needed to minimize waste and to shave the last bit of excess cost out of production operations.

Finally, Reynolds helps you take the fullest advantage of these variables by providing truly unmatched engineering and analytical service . . . nation-wide. Can wire cloth do a *better* job for you? Can you cut costs? Could wire cloth be the answer for certain *new* requirements? Check with Reynolds . . . see what *Reynolds* service and quality control offers!

NATIONAL STANDARD

DIVISIONS: **NATIONAL-STANDARD, Niles, Mich.**; *tire wire, stainless, music spring and plated wires* • **WORCESTER WIRE WORKS, Worcester, Mass.**; *music spring, stainless and plated wires, high and low carbon specialties*
WAGNER LITHO MACHINERY, Secaucus, N. J.; *metal decorating equipment* • **ATHENIA STEEL, Clifton, N. J.**; *flat, high carbon spring steels* • **REYNOLDS WIRE, Dixon, Ill.**; *industrial wire cloth*



Here's a stainless lollipop sea water can't lick

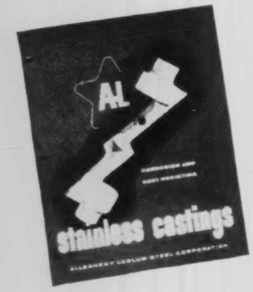
This large (48″ dia., 1701 lbs.) and unusual stainless casting was fabricated by Allegheny Ludlum's Buffalo, N.Y. foundry. It is scheduled for service under the most severe operating conditions, functioning as a wafer valve disc at 25 psi pressure in sea water. Since long life and tight closing are essential in this application, corrosion resistant Type 304 Allegheny Stainless was specified.

Some unusual techniques were employed in the fabrication of this casting. Although the entire valve disc was cast as a single piece, its sides are hollow, with a skin only ¾″ thick. The center shaft was cast solid at the same time the side wings were cored, permitting the single piece, seamless part desired.

If you have a casting problem, or *any* problem that involves corrosion resistance, long life, resistance to wear and abrasion, call the Allegheny Ludlum Sales Office nearest you. An A-L Sales Engineer is ready to put his skills and those of the A-L Technical Staff promptly at your disposal, to serve your requirements from the largest and most complete line of stainless products on the market.

Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pennsylvania.

WSW 6663


AL
corrosion and heat-resisting
stainless castings
ALLEGHENY LUDLUM STEEL CORPORATION

Write for this 28-page booklet on A-L STAINLESS CASTINGS

28 pages of valuable and complete data on stainless castings: analyses, properties, technical data on handling and heat treatment, typical applications, how to order, etc.

ADDRESS DEPT. S-2

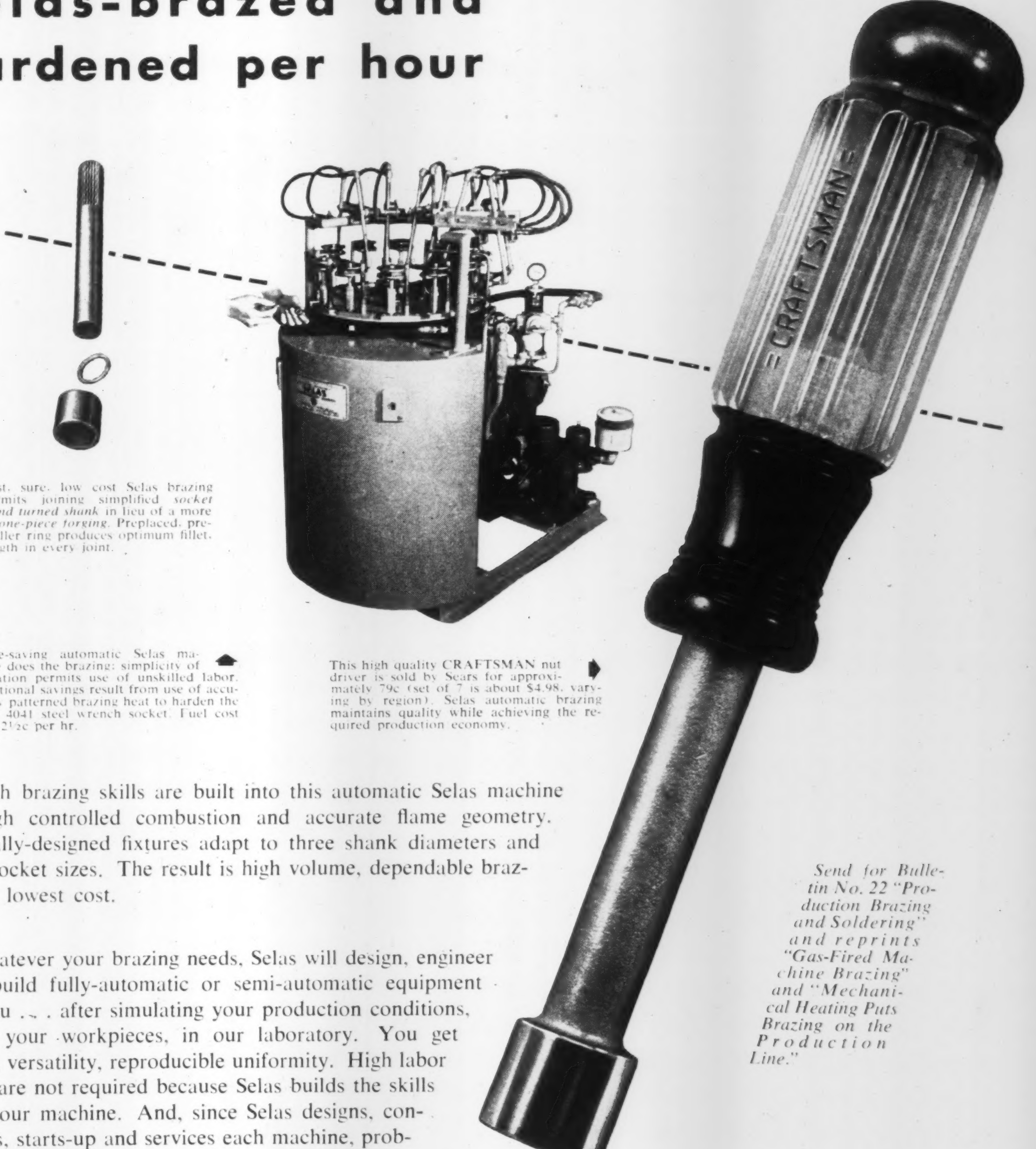
Make it BETTER and LONGER LASTING with

ALLEGHENY STAINLESS

Warehouse stocks carried by all Ryerson steel plants

our research is your reward

400 CRAFTSMAN SOCKET WRENCHES Selas-brazed and hardened per hour



Fast, sure, low cost Selas brazing permits joining simplified *socket forging and turned shank* in lieu of a more complex *one-piece forging*. Preplaced, preformed filler ring produces optimum fillet, full strength in every joint.

Space-saving automatic Selas machine does the brazing: simplicity of operation permits use of unskilled labor. Additional savings result from use of accurately patterned brazing heat to harden the AISI 4041 steel wrench socket. Fuel cost only 2½c per hr.

This high quality CRAFTSMAN nut driver is sold by Sears for approximately 79c (set of 7 is about $4.98, varying by region). Selas automatic brazing maintains quality while achieving the required production economy.

High brazing skills are built into this automatic Selas machine through controlled combustion and accurate flame geometry. Specially-designed fixtures adapt to three shank diameters and nine socket sizes. The result is high volume, dependable brazing at lowest cost.

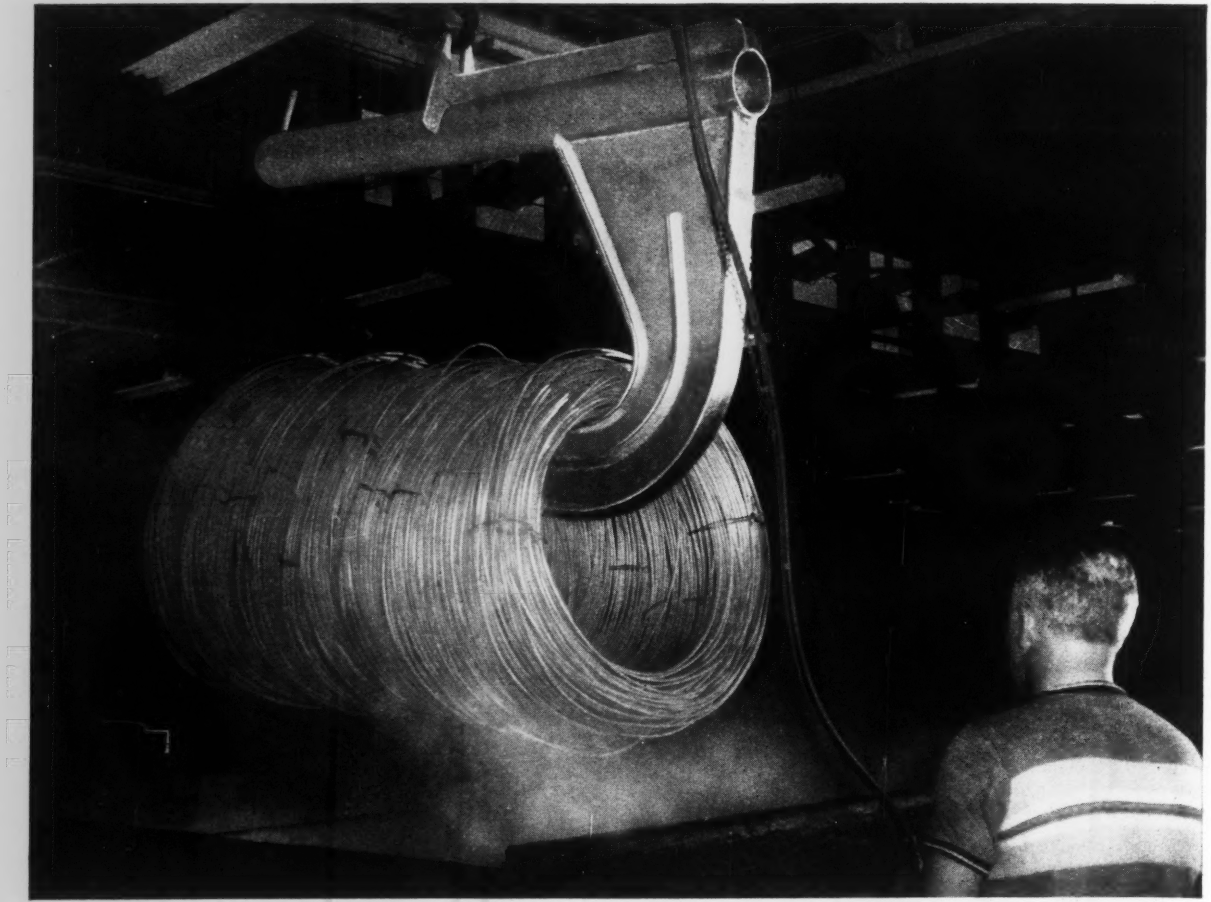
Whatever your brazing needs, Selas will design, engineer and build fully-automatic or semi-automatic equipment for you . . . after simulating your production conditions, using your workpieces, in our laboratory. You get speed, versatility, reproducible uniformity. High labor skills are not required because Selas builds the skills into your machine. And, since Selas designs, constructs, starts-up and services each machine, problems usually associated with divided responsibility are eliminated.

Send for Bulletin No. 22 "Production Brazing and Soldering" and reprints "Gas-Fired Machine Brazing" and "Mechanical Heating Puts Brazing on the Production Line."

SELAS
CORPORATION OF AMERICA
DRESHER, PENNSYLVANIA

Heat and Fluid Processing Engineers
DEVELOPMENT • DESIGN • CONSTRUCTION

SELAS



Short ton or a long ton. No need to be fussy about loading pickling equipment made of Monel alloy. It *stays* strong. And it's easy to fabricate in heavy structures like this pickling hook. Hook was designed and built by Youngstown Welding and Engineering, Youngstown, Ohio for Triangle Conduit and Cable Company.

After 8 years on the pickling line . . . this Monel hook is solid all the way through

There's certainty about the strength of a Monel* nickel-copper alloy pickling hook.

Take the Monel hook above. It's just as solid as it looks . . . all the way through. In fact, in this plant a Monel hook has given over eight years of continuous service in 6% sulfuric acid at 140° F. Only minor repairs.

What makes Monel pickling hooks different?

Monel alloy provides a unique combination of strength and resistance to corrosive attack from sulfuric acid pickling solutions. It's the strongest non-ferrous metal you can use for pickling. And it outlasts other materials many times over.

Because Monel alloy is strong, you can have pickling hooks that are lighter, carry greater loads with less deadweight. No need to allow extra metal to offset corrosion. And here's another saving: you can easily repair Monel alloy equipment after years of service.

Monel alloy is a natural for other pickling equipment, too

Monel slings, chains and tie rods are low in deadweight, tops in corrosion resistance and strength. And in fabricated equipment like baskets, crates and racks, Monel alloy's workability and easy welding properties really pay off. You'll find details about Monel pickling equipment in a 32-page illustrated booklet "Equipping the Pickle House for Greater Production at Lower Cost." For your copy, just write Inco.

*Registered trademark

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street INCO New York 5, N. Y.

INCO NICKEL ALLOYS

STEEL

February 3, 1958

Metalworking Outlook

Steel Earnings Good in '57, but—

Steel earnings in '58 will be markedly below last year's, but 1957 results compare well with 1956's. U. S. Steel Corp. had record earnings last year after taxes—$419.1 million, compared with $348.1 million in 1956. Results for other companies (1957 vs. 1956): Republic Steel Corp.—$85.0 million vs. $90.4 million; Inland Steel Co.—$58.9 million vs. $53.0 million; Jones & Laughlin Steel Corp.—$45.5 million vs. $45.1 million; Youngstown Sheet & Tube Co.—$42.5 million vs. $43.2 million; Wheeling Steel Corp.—$12.1 million vs. $17.7 million; Pittsburgh Steel Co.—$4.2 million vs. $6.2 million; Alan Wood Steel Co.—$2.1 million vs. $3.1 million.

Replacement Market for Machine Tools

Some 65 per cent of machine tools in use are at least ten years old, and almost 20 per cent are more than 20 years old, says the Business & Defense Services Administration's Metalworking Equipment Division. So, it reasons, the replacement market offers "the most encouragement to the industry." The BDSA unit is more pessimistic than the builders about machine tool sales for '58. It predicts a $400 million volume. Builders expect $506 million (Page 66).

Stockpiling in the Nuclear-Space Age

Recommendations are in from the Office of Defense Mobilization's special stockpile advisory committee. ODM Chief Gordon Gray will act soon (with encouragement from Congress). The committee recommends: 1. Stockpiling emphasis should be shifted from raw materials to finished items. 2. The government should encourage utilities and construction industries to carry above-normal inventories. 3. We should stock high temperature and other special materials to meet needs expected five to ten years from now. 4. Critical items not stocked now to meet a three-year war should be purchased immediately. 5. Metals and minerals meeting commercial standards which are in excess of goals should not be disposed of. 6. But subspecification materials should be disposed of if they can't be upgraded. 7. Stockpile buying to maintain domestic industries is not a policy to be substituted for tariffs, quotas, and tax concessions. 8. Contracts calling for delivery of material in the future in excess of the new goals should be ended.

Wage Gains Slowing Down?

The negotiated wage rise may be slowing. During the first weeks of 1958, gains were about 1 cent less than they were in the same period of '57. The Bureau of National Affairs reports that unions won wage increases averaging just over 10 cents an hour in 1957. Manufacturing increases were slightly less than 10 cents; nonmanufacturing gains averaged 12 cents. Wage gains generally were greater on the West Coast (12 cents) and smallest in New

Technical Outlook—Page 107 Market Outlook—Page 157

England (9 cents). Deferred increases, to take effect in 1958 and subsequent years, were provided by 26 per cent of 1957 settlements.

Engineering Enrollment Up, Grads Down

Engineering enrollment is higher than it was in 1949, but we're graduating only about 75 per cent as many engineers as we did in 1948-49. Last fall, engineering enrollment hit 297,077 in the U. S., compared with 219,712 in 1949. But only 37,039 received engineering degrees in 1956-57, compared with 50,415 in 1948-49.

Japan Leads as Shipbuilder

Japan is the world's leading shipbuilder. Shipbuilders throughout the world had a peacetime record of nearly 10 million gross tons of merchant ships under construction last quarter, reports *Lloyd's Register of Shipping*. Japan launched 2.4 million gross tons of shipping last year, 1 million more than her nearest rival, the United Kingdom. Several Free World nations, headed by Finland, were building 89 merchant ships totaling 212,886 tons for Russia. Communist maritime nations of Poland, Yugoslavia, and China had 43 ships totaling 139,635 tons being built by non-Communist countries.

Expansion in Chemicals

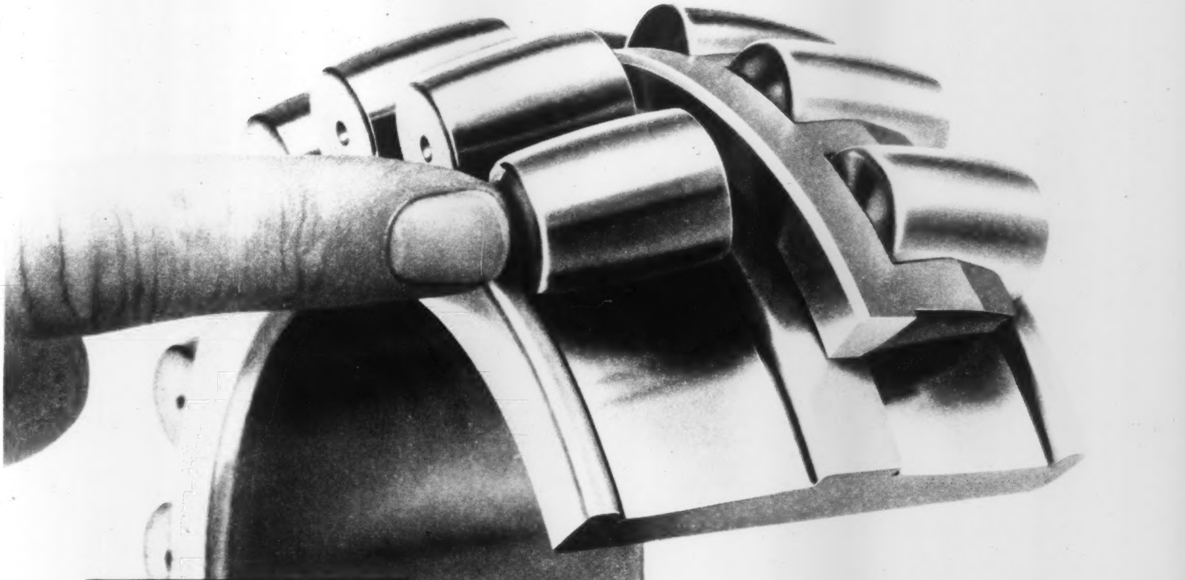
Look for $2.54 billion to be spent for domestic construction of new chemical production facilities this year and next, says the Manufacturing Chemists' Association. Some 322 projects are underway and will cost about $1.83 billion; another 119 to cost $708 million are scheduled to begin soon and to be finished before 1960. Chemical producers in 1957 completed 309 projects costing $1.3 billion.

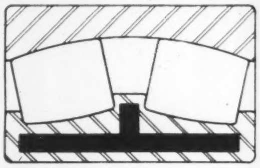
Radioisotope Use Mounts

Some 1316 industrial firms are using radioactive byproduct materials in 1820 different installations, reports the Atomic Industrial Forum. Of the 200 that first began utilizing radioisotopes last year, 65 use them for gaging and 59 for inspection. Those two uses lead all others among the 1316, too. New York still accounts for the largest number of industrial users, with California and Pennsylvania ranked second and third.

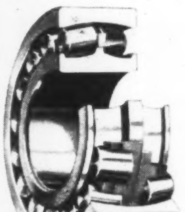
Straws in the Wind

Kaiser Steel Corp. is slowing down the steelmaking portion of its $194 million expansion program at Fontana, Calif. . . . James R. Hoffa can now become the Teamster president, with three outside advisers looking over his shoulder . . . National Industrial Conference Board's consumer price index rose 0.1 per cent in December to bring it to 106.0 (1953 = 100), 2.7 per cent above year-ago levels . . . Better incentive systems for research scientists would go a long way toward improving their performance, reports the American Management Association.





Basic "T" section design shows "backbone" construction that insures positive roller guidance and stability without skewing under all load conditions.



For roller stability...

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The only *positive* way to guide rollers is by an integral center guide flange—backbone of the *Torrington* Spherical Roller Bearing. No floating ring can match it for stability under heavy radial and thrust loads.

This "bearing with the backbone" insures true rolling motion . . . prevents stress concentration . . . means minimum friction. It makes possible open-end cage design, too, with no shrouds to impede circulation of lubricant to bearing contact surfaces. There is less heating and more positive lubrication.

The integral center guide flange is adapted from the same principle used in the design of Torrington Tapered Roller Bearings. This refinement is typical of Torrington's uncompromising engineering that assures you the ultimate in bearing performance. **The Torrington Company, South Bend 21, Ind.—and Torrington, Conn.**

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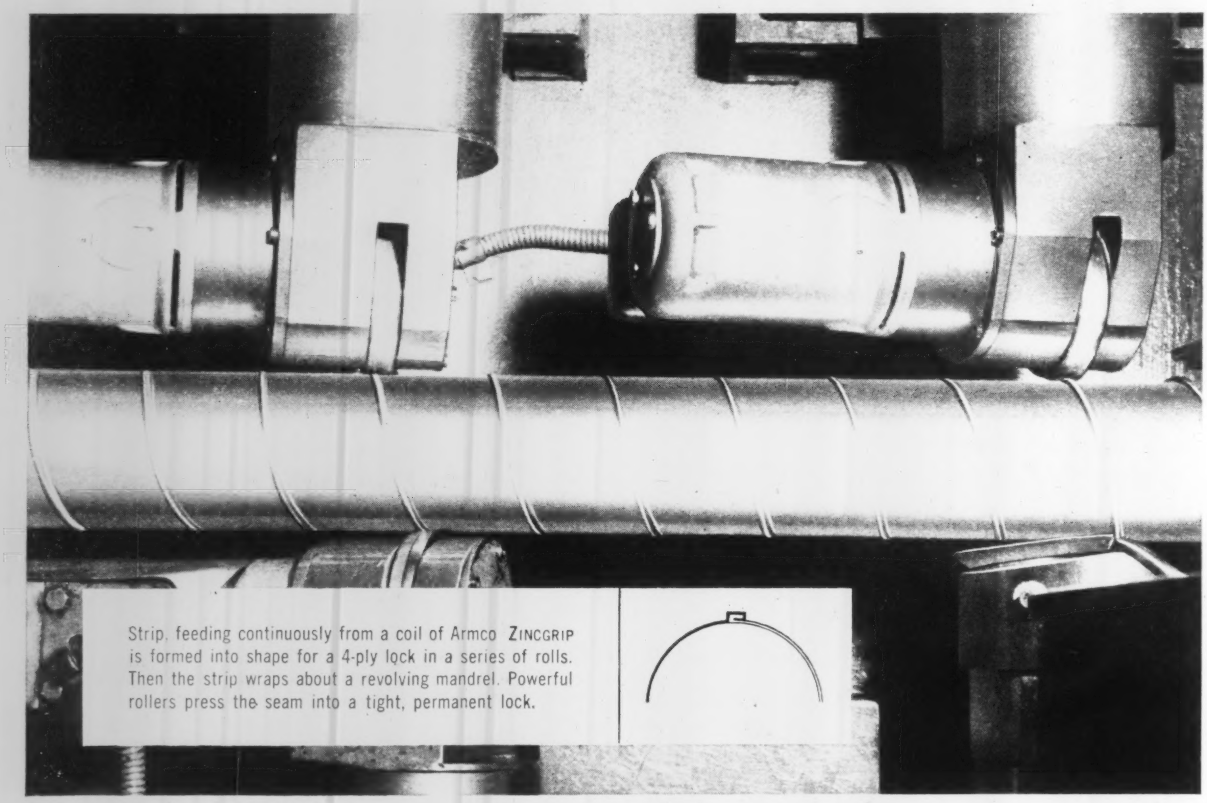
Zinc coating on Armco ZINCGRIP Steel doesn't flake or peel



Strip, feeding continuously from a coil of Armco ZINCGRIP is formed into shape for a 4-ply lock in a series of rolls. Then the strip wraps about a revolving mandrel. Powerful rollers press the seam into a tight, permanent lock.

Here's in-shop evidence that the zinc coating on Armco ZINCGRIP® Steel clings tightly during severe fabrication.

This machine forms sheet metal into conduit with a continuous spiral lockseam. Few fabricating operations could provide so severe a test for a zinc-coated steel. But Armco ZINCGRIP Steel meets every requirement. Its special hot-dip zinc coating doesn't flake or peel.

This complete zinc protection is doubly important for the conduit. It not only wards off rust when exposed on construction sites, but resists corrosion in areas within buildings where maintenance is difficult or impossible.

If your products require drawing, forming, lockseaming, or any other severe fabrication, you can rely on Armco ZINCGRIP. Just fill in and mail the coupon for full information about this workable, zinc-protected steel.

Other Armco Steels for top-quality products include ZINCGRIP PAINTGRIP®, Stainless Steels, ALUMINIZED STEEL, Cold-Rolled PAINTGRIP, Enameling Iron, Steel Tubing, Electrical Steels, High Strength Steels, Long Ternes, and high-quality Hot- and Cold-Rolled Sheets.

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February 3, 1958

Who Beats the Cost Crisis?

Shrinking volume following a siege of wage and price inflation is bringing troubles to the metalworking industries.

Companies geared to making a fair profit at 80 to 100 per cent of capacity are finding the going rough at 70 or 60 or 50 per cent.

Costs continue to balloon. Wages will continue their spiral. Some materials will become dearer.

Price boosts will be resisted.

The result is a Cost Crisis. The problem is how to beat it.

We have no doubt the decline in business is temporary and will be followed by new peaks of activity and prosperity. But we cannot live today on the future. We must face the immediate situation with sharp and well considered action—to survive and to keep healthy for the next upswing.

Several hundred thoughtful metalworking men give us these suggestions:

1. Trim away the fat that inevitably accumulates during a lush boom.
2. Sharpen and co-ordinate marketing organizations and practices.
3. Lower unit production costs by using the most efficient equipment available.

Those paths to profit, taken singly or jointly, will lead you out of the cost crisis. Our interviewees believe the most dramatic savings can be made with No. 3 (see Page 103).

Who can beat the cost crisis?

Are you top management? Are you close enough to the firing line to get all the facts? Do you have time to examine your production processes in detail to find out how manufacturing costs can be reduced?

Or will you delegate to your production supervisor, your engineering manager, your purchasing directors the responsibility and authority to seek out ways to lower unit production costs? Will you let them know you expect them to take the initiative and will listen to what they recommend? Their suggestions may involve steps you can't afford not to take.

Who can beat the cost crisis?

Are you middle management—in production, engineering or purchasing? Is it not your job to figure out how more efficient equipment can lower manufacturing costs? Are you thoroughly familiar with all available equipment?

Your boss expects you to be a self-starter. Figure out savings in detail. Be prepared to back words with figures. Show top management how production costs can be cut and you pave the path to profit for your company and win personal recognition for yourself.

Who can beat the cost crisis?

You can.

Walter J Campbell

EDITOR

washed
unwashed

WASHED WASHERS

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Clean hands do better work, result in cleaner workmanship on the assembly line. With washed washers, workers' hands stay clean. There is no grime, grease, graphite or other foreign matter to rub off on workers hands or on the work itself. Upholstery and woodwork is not soiled, metal components, painted and plated surfaces stay clean.

The new *washer washing* process, which also includes *rust resistant* treatment, recently introduced by Wrought Washer, is used on all popular sizes of U. S. Standard and S. A. E. Washers, on Rivet Burrs and Machinery Bushings, as well as most special washers and stampings. Add this new washing process to the consistent high quality for which Wrot Washers are noted and preferred . . . and you have a positive *Plus Value* at no extra cost.

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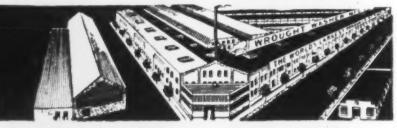
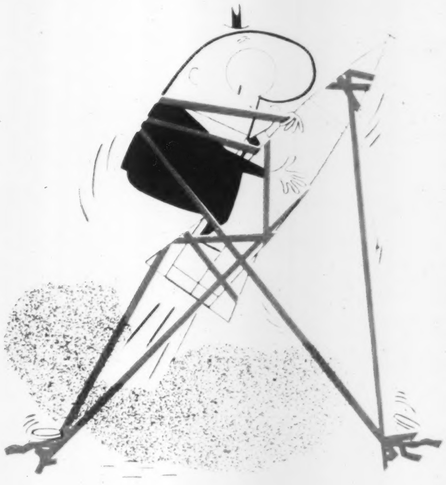




Solving the Missile Mess

Here's a digest of opinions offered by 100 companies in the business. Many are small subcontractors. All agree on the most direct route to a speedup: "Cut the red tape"

"SUPPOSE you had a revelation, detailing the perfect weapon: It would still take almost three years to get the money appropriated." That description of our defense posture comes from Kendall Hoyt, executive director, Association of Missile & Rocket Industries, Washington. Mr. Hoyt heads up the newest industry association designed to get this country better organized for the space race.

The three years from revelation to appropriation are about evenly divided between planning action within the Pentagon and the time required to clear plans through the various departmental levels to final budget authorization. Procurement requires additional years.

Survey Findings—Mr. Hoyt is surveying firms on ways to speed up our programs. The cry of "cut the red tape" rings through the 100-odd replies already in. Another 100 to 200 are expected from a mailing which hit the most important missile and component manufacturers. Replies are about evenly divided between small (less than 500 employees) and large companies.

Less than 10 per cent of the respondents (company presidents, general managers, sales managers, and research division heads) think we can win the missile race without further centralization of the many authorities now running our programs. The ratio is 5 to 4 in favor of more centralization outside the Defense Department, rather than confining reorganization within the Pentagon. About 60 per cent feel we must also establish a new space science board, while the others think the research job could be handled by broadening the powers of the National Advisory Committee for Aeronautics.

H. J. Shapiro, president, Aerotest Laboratories Inc., College Point, N. Y., thinks the centralization job can be done within the Pentagon and NACA. He believes it to be a matter of "greater cooperation among the services to prevent unnecessary duplication." A harsher opinion: R. L. Garman, vice president, engineering and research, General Precision Equipment Corp., New York, calls for "less committee work, especially by committees which are completely uninformed." The president of a southern firm suggests we must "produce a defense organization which will work more directly with manufacturers."

The general manager of a California component maker thinks: "After a program has been approved, the prime contractor should be given more latitude and responsibility" than he has now. "Unification of service buying" is demanded by a research manager of a large Pennsylvania company. The vice president of a New Jersey guidance system producer warns that "too much time is consumed between the initial decision and the beginning of development work." Sums up a Chicago respondent: "We must promote the common sense approach. American ingenuity is not being utilized."

Another Hitch—Over half the respondents note security restrictions as one of their most serious problems. A midwestern fuel manufacturer says he has difficulty learning the "new requirements for rocket fuels." The president of one of the country's largest research laboratories says security is his most serious problem; the head of a small plastics firm agrees.

Comments Robert C. Lewis, president, Calidyne Co. Inc., Winchester, Mass., designer and manufacturer of vibration test equipment: "We develop highly specialized equipment without access to any program information as to requirements." A sales engineer for a ground support equipment maker in Michigan notes that less classified information is needed, "especially on component requirements."

Contract Practices — The way contracts are handled by the Pentagon came in for more comment than any other subject. About one-third of the replies rate renegotiation as one of their most serious problems, while bidding and advertising practices drew these remarks: "Use less bid type negotiations on R&D work," says a Michigan research firm. "Procurement in many cases is more effective on a negotiation basis than on public bids," argues a Pennsylvania company. Herbert L. Goda, president, American Research & Mfg. Corp., Rockville, Md., asks the Pentagon to "reduce the complexity of multiple bidding requirements."

L. J. Williams, regional representative, Farnsworth Electronics Co., Washington, thinks one of AMRI's jobs should be to "convince Congress that advertised procurement hurts, not helps, small businesses." The president of an eastern firm states: "The competitive bidding system is wasteful. Invitations to bid should be extended to a limited number of competent firms." The president of an Ohio company thinks "competent firms" should be those able to handle the contracts "without added expansion." From New Jersey: "We need more negotiated contracts with responsible firms." Concludes a fabricator of parts for airframes and radomes: "Eliminate renegotiation of fixed-price contracts because the contractor is penalized for efficiency."

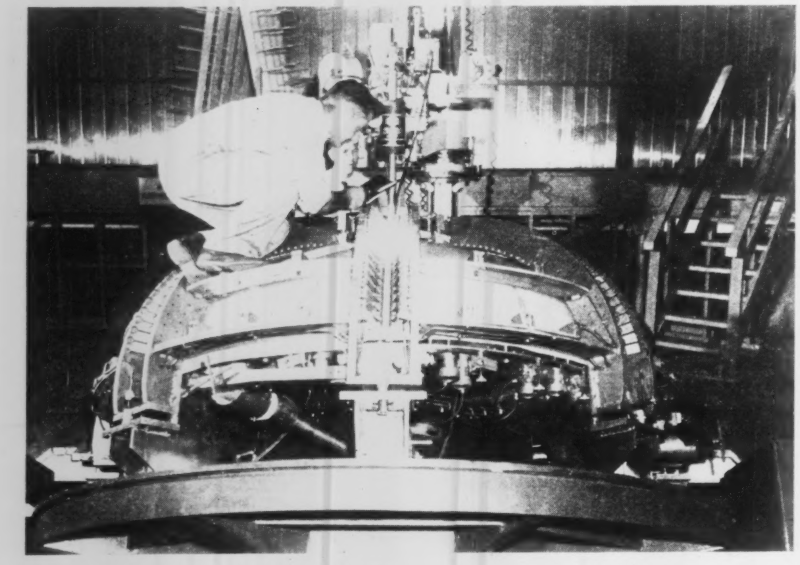
Significantly, there was only one call for more advertised bidding. With half the respondents small firms, ten reported having received help from the Small Business Administration in getting defense business.

Over 95 per cent report plant capacity available for additional missile contracts. About one-third say they have seen their missile work cut back or stretched out as a result of the 1957 budget crisis. Financing plant expansion is difficult for over 40 per cent of the companies.

After the Contract — Your troubles only begin with the signed contract, believe many firms. "Engineering changes" are a headache for a Connecticut metal fabricator. A Detroit firm claims the Pentagon regards "development work on the same basis as off-the-shelf work." A New York company thinks government funds should be committed for longer than one year. The processing of contract changes must be speeded up, says Frank R. Cook, president, Frank R. Cook Co., Denver. The president of one of the most widely known missile firms argues that "the biggest single bottleneck for both the government and the contractor is the practice of funding by the year, rather than by the project."

Says Lisle Horton, president, Kittell Lacy Inc., El Monte, Calif., producer of ground handling and testing equipment: "Contracting officers should have more authority over their technical advisers to force more rapid answers to day-to-day contract problems." The general manager of a Chicago electronics firm suggests the Pentagon "must reduce reliance on detailed specifications and rely heavily on performance requirements." Carl Lagerfelt, president, Western Arc Welding Inc., Los Angeles, suggests "unrequired close tolerances be eliminated."

Consensus—The U. S. missile industry isn't too happy with itself or with the government it serves. Perhaps the industry can hope some of the recommendations of the Senate Preparedness Subcommittee are acted upon soon. Besides generalized statements on stepping up our missile work, they include these proposals: 1. Cut leadtime in development of weapons systems by reducing decision time and simplifying procurement procedures. 2. Accelerate R&D work by long term funding and getting improved control and administration within the Pentagon or through a new separate agency.



Arcwelding the Titan ICBM

Aluminum sections forming the fuel tank of the Titan ICBM are joined by an inert gas arcwelding process at Martin Co., Denver. Air Reduction Co. designed the special facility which is billed as the "largest precision welding tool installation ever engineered in the U. S."

Venezuela Buys Motors

Electrical equipment worth about $3 million has been ordered from Westinghouse Electrical International Co., New York, for three rolling mills in Venezuela's first integrated steel plant. Included are 16 motors that will deliver 19,300 hp. The $343-million Orinoco steel mill is being built near Puerto Ordaz by Innocenti S.G., Milan, Italy.

Westinghouse will supply the main drives and controls for a 44-in. reversing blooming mill and a 22-stand rod and merchant bar mill, plus controls for a 31.5-in. reversing billet and rail mill.

The Orinoco mill will turn out 550,000 tons of finished steel products annually when it reaches full operation in 1960. About half the output will be used to meet increasing needs of the country's oil industry, which is required by Venezuelan law to refine 10 per cent of all oil brought to the surface. Other major products of the plant will be corrugated bars for use in reinforced concrete construction and rails for a projected national railway expansion.

Furnace Orders To Climb

Makers expect the pickup to start in the second half. Sales for 1958 may match or slightly exceed the 1957 level of $79.6 million. Prospects are analyzed

MAKERS of industrial furnaces and induction heating equipment expect their volume of new orders to swing upward in the second half.

C. F. Olmstead, newly elected president of the Industrial Heating Equipment Association and president of Lee Wilson Engineering Co., Cleveland, analyzes prospects this way:

"Furnace sales were excellent in the first half of 1957 but dropped off sharply in the second half. The situation will be reversed in 1958. A relatively poor first half will be followed by a rising trend in orders in the second six months that will carry on into 1959. Total sales in 1958 may be expected to match or possibly slightly exceed those of 1957."

Influences—Mr. Olmstead thinks that these influences will contribute to expanding furnace sales:

1. The need for additional productive capacity to meet anticipated greater demand in the 1960s.

2. Replacement of obsolete equipment. During the current slack period, he points out, cost savings are showing up more strikingly than when plants are busy. Management finds it can afford to operate only its newer and more efficient furnaces while older equipment stands idle. This emphasizes the fact that equipment unable to pay its way eventually must be replaced.

Sales—Combined sales of industrial furnaces and induction heating equipment came to $79.6 million last year, off 35 per cent from the peak of $123.1 million in 1956 and 25 per cent below the 1955 mark of $106 million.

The furnace industry entered 1957 with a record backlog of $118.6 million, but a large portion was whittled away during the year. The present backlog is estimated at $30 million to $50 million. Some builders have four to five months' work on their books. Others have little or none.

Prices—Some furnace builders have raised prices 5 to 10 per cent to pass along high costs of materials and components, including steel, refractories, and instruments. Paradoxically, price cuts of as much as 40 per cent are showing up when desirable jobs come along.

In addition to naming Mr. Olmstead president, IHEA elected as vice president R. L. Harper, executive vice president, Harper Electric Furnace Corp., Buffalo.

Completes Third Step

Lone Star Steel Co., Dallas, is booking orders for stretch-reduced casing and tubing made on its new mill. It was built by Mannesmann-Meer Engineering & Construction Co., Dusseldorf, Germany.

Installation of the mill marked the completion of the third step of an $8 million expansion program. The last two phases—installation of a reinforcing bar mill and an open hearth—are underway.

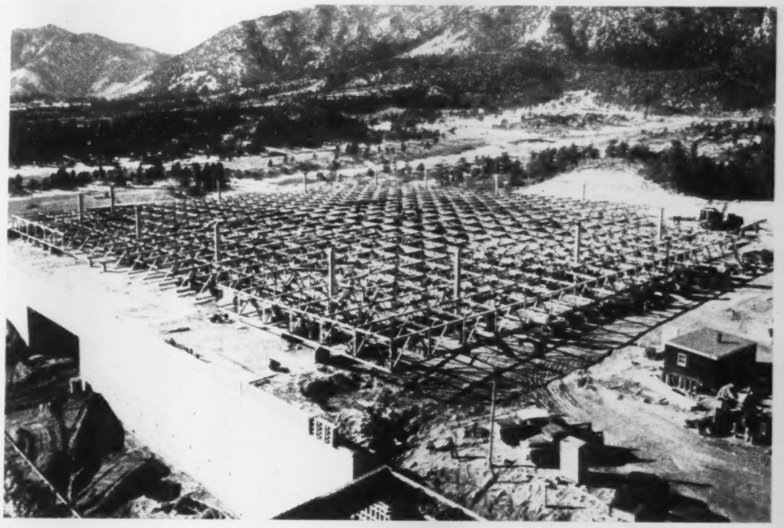
Anaconda Starts Building

Ground has been broken for Anaconda Wire & Cable Co.'s $1 million plant at Watkinsville, Ga. The one-story manufacturing and warehousing facility will be built on a 175-acre site purchased last year. Scheduled for fall completion, it will employ about 100. Manager will be David T. Werner, formerly the Charlotte, N. C., district sales manager.

New Ovens Aid Two Firms

Dominion Foundries & Steel Ltd., Hamilton, Ont., has lighted its 45 new coke ovens. The $7 million expansion brings Dofasco's total to 105 ovens. The new battery will use 1000 tons of coal daily to produce about 670 tons of coke and 11 million cu ft of gas.

North American Cyanamid Ltd. will build a plant adjacent to the Dofasco facility to manufacture agricultural and industrial chemicals from coke oven byproducts.

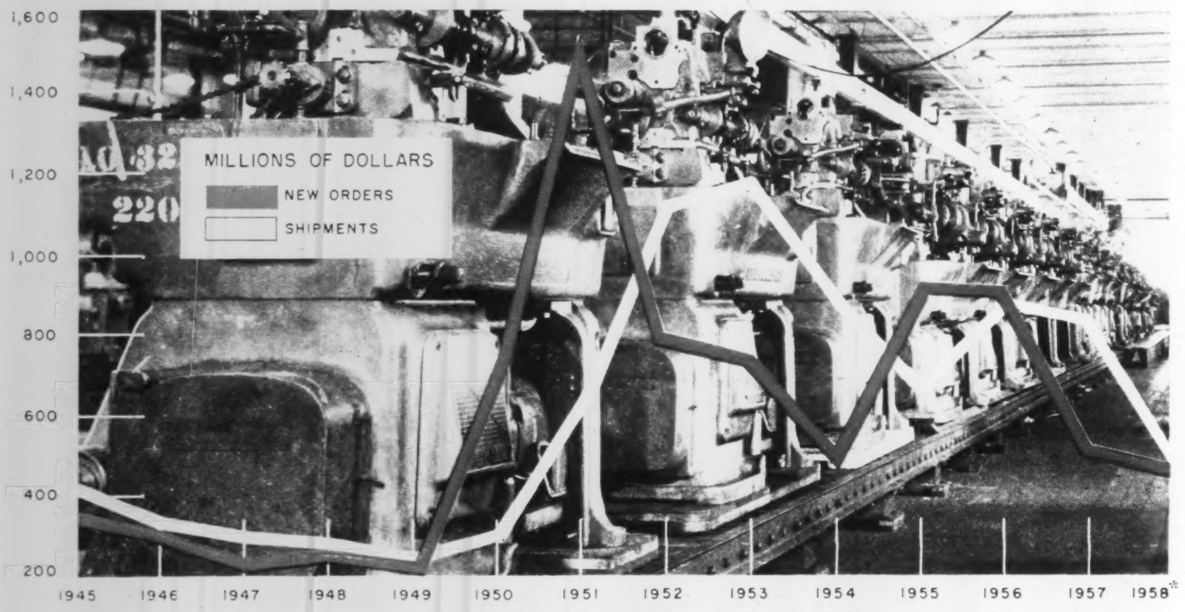


Crew Raises Roof at New AF Academy

The 1150-ton steel roof of the new Air Force Academy dining hall at Colorado Springs, Colo., was assembled and welded on the ground. Hydraulic jacks raised it into position in one piece. It rests on 16 columns spaced 20 ft inside the perimeter. It gives the hall a 266-ft square dining area free from obstructions. During construction, American Bridge Div., U. S. Steel Corp., used 14,500 lb of welding rods

The Postwar Era in Machine Tools

1958 will be down but still won't fall to level of late 1940s



Source: National Machine Tool Builders' Association.
*Estimated by STEEL.

The Tool Outlook for '58

Most of 69 builders queried by STEEL think this will be a "valley" year. High inquiry rates, more attention to replacement markets keep hopes alive. Here's what builders say

QUESTION
In 1957, the National Machine Tool Builders' Association reported new orders at $520 million. What will they be in 1958?

ANSWER
$477 million.

QUESTION
The 1957 NMTBA figure for shipments was $843 million. What will it be this year?

ANSWER
$506 million.

QUESTION
Will the rate of new orders pick up in 1958?

ANSWER
Yes, in the third quarter.

INCOMING net orders for machine tools hit their lowest level in December ($18.6 million) since October, 1949. If they were to continue at that pace, orders for the year would come to only $222 million. You'd have to go back to the thirties for such a year.

But STEEL's survey respondents think there's little danger that 1958 will be that bad: 59 predict an upturn; 29 peg the third quarter as the turning point; 17 like the second quarter; 11 take the fourth. Only one expects the pickup to come before April.

The Blame—At the moment, autodom is the weakest customer industry. Also mentioned frequently: Farm implement and road machinery builders, aircraft companies, appliance makers, and the machine tool industry itself. Many respondents said all customer groups are inactive.

Which customers are buying? The answers revealed no outstanding group. One respondent summed up the problem: "It's difficult to find an active customer."

White Hopes—If the new order

pace picks up in 1958, automakers should lead the way, survey reports indicate. The only close contender is the government, with most hope riding on the missile program. But there's a lot of doubt about how much the two markets will prop up sagging volume.

Cadillac, Oldsmobile, and Pontiac probably are in for new transmissions in 1960—this should mean some machine tool business later this year. Talk at Chrysler's divisions centers on rear end transmissions, but apparently nothing is certain about them for 1960. Some Ford officials hint at a new two-stage automatic transmission (mentioned in connection with a front end drive), but it must be classed as only a rumor for 1960. Over-all, the odds seem to be against big scale programs in Detroit this year.

Prospects for missile business have realistic limitations. Production is in terms of hundreds or thousands. It's hardly up to the mass-production level. Another thing: Most of the machining jobs can be handled by standard machine tools, and the government is loaded with them. "I can't see much market for new machines here," a top Defense Department official admits privately.

Shipments—In 1956, the industry shipped $886.4 million worth of new metal cutting machine tools. In 1957, shipments dipped slightly to $843.2 million. Builders who took part in the survey expect their shipments this year to be 40 per cent lower than they were in 1957.

Capacity—Although the industry could probably produce over $1 billion worth of machines a year, it is trimming operations every day. Respondents told STEEL they had cut back an average of 28 per cent—54 report layoffs and 49 have reduced the workweek.

Even more foreboding: 34 think they'll have to slash operations still more before the upturn comes this year.

Inquiries—Most builders report a fair to good rate of inquiries. This seeming paradox (high customer interest vs. few sales) can be explained by at least three factors.

First, some builders say interest at production level is genuine but that the top-level approval for funds isn't coming. Second, with salesmen and sales engineering departments scratching for business, there is a tendency to bid on jobs that wouldn't get a second glance when business is good. Third, customers with programs in the works (but still lacking a go-ahead) are spending their time shopping and thinking. Their programs may not turn into orders for months.

Exports-Imports — The problem here is chiefly one of imbalance. American machine tool builders are faced by a waning export market. Competition from foreign-built machines in the U. S. market is on the increase. Both trends owe their existence chiefly to the low cost of building machine tools abroad—about 50 per cent under the U. S. cost.

What's the answer? Few builders pretend to know. More and more companies are arranging to build their machines overseas. Licensing agreements with foreign companies and U. S. builder-owned plants abroad are on the increase.

Such moves will help American machines compete in the foreign markets. But what about the foreign competition in this country? One answer is to build abroad and ship into the U. S. to compete at the relatively low import price level. (Although the idea has occurred to builders, few will admit it.)

Once started, that trend would put part of our machine tool industry overseas, a situation most builders (and most government men) don't like to contemplate. For this reason, Washington may soon take a keener interest in its machine tool industry, and a partial solution, at least, may be on the way.

Dark Before Dawn—Despite real concern over the prospects for 1958, builders hold no gloom for the long term outlook. There is little doubt that a return will set a healthy capital goods climate for the future.

More and more builders are giving increased attention to replacement markets, counting less on expansion demands to keep their business high over the long pull.

What Toolbuilders Say . . .

Here are other answers gathered in STEEL's survey of 69 machine tool builders. Producers of special machines and forming equipment painted a picture a shade bleaker than the others, but, over-all, the pattern was uniform.

Q. What is your average backlog?

A. 2.9 months.

Q. What was it a year ago?

A. 6.4 months.

Q. Will you deliberately key shipments to new orders to prevent further backlog declines?

A. 32 will; 28 say they won't.

Q. How are your exports holding up?

A. They're slipping.

Q. Are imported machine tools a problem?

A. In some lines, particularly standard machines. The problem is getting more acute.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.*

What'll Reuther Sign for?

Carmakers are trying to figure out which of his demands are in earnest. Profit sharing looks like a gimmick, but his propaganda tactics win popular support

NEXT WEEK, the United Auto Workers' General Motors Council will draw up demands it will settle for without a walkout. They will be a closely guarded secret. A much fatter list will be released for public consumption.

Car company strategists are trying to figure out what will be included among the "minimum requirements" and which of the Big Three will be hit by a walkout if there is one. (A strike at GM or Ford now seems likely.)

The pattern set by Mr. Reuther and rubber-stamped by the GM Council (representing 350,000 workers) will be copied by the Chrysler Council (95,000) which meets Feb. 19-20 and the Ford Council (135,000) which meets Mar. 4-5.

Profit Sharing—It's a cinch that the union will demand more than the two-year contract extension offered by Harlow H. Curtice, General Motors Corp. president. It's also a safe bet, say most informed sources, that Walter Reuther's latest gimmick—the revolutionary and controversial profit sharing plan will not be on the list of minimum requirements.

It is a propaganda device to convince the public that he is sincere in his announced aims to combat inflation and base all contract demands on improved productivity.

Negotiable? — Although the Supreme Court and the National Labor Relations Board have indicated that profit sharing is a bargainable issue, the principle has never been tested. Determining how profits are to be split is traditionally a management prerogative. Should this right be surrendered to the collective bargaining process, it would open the door to union veto power over day-to-day management decisions, believes Ernest Breech, Ford Motor Co. chairman.

Mr. Reuther failed to make a rebuttal.

He has also failed to explain the situation at Studebaker-Packard Corp. Will UAW employees there be asked to share that company's losses?

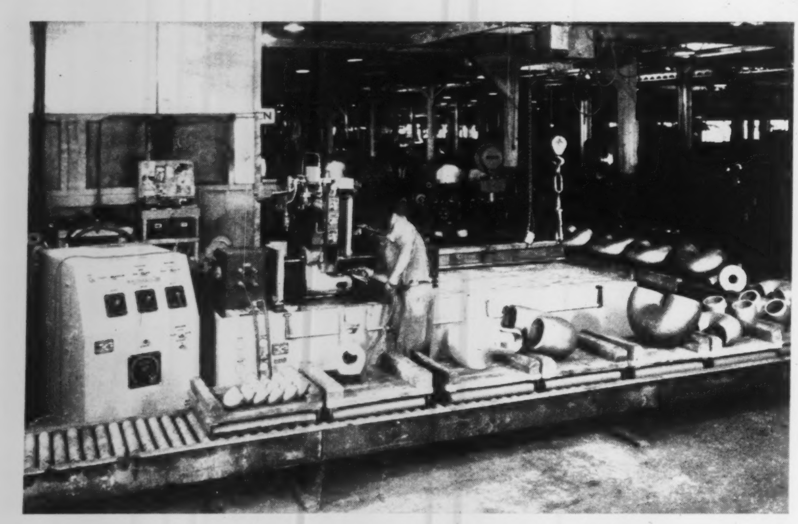
His Latest Move—Mr. Reuther opened last week's Senate hearings on the auto industry with a demand for an "Office of Consumers' Counsel" to act as the government's arm in holding down prices. Contemplated price hikes would be reviewed by the office. It would not pass on the industry's right to boost prices but would publish its findings so "the public would be able to determine for itself whether a price increase is justified."

Forceful—Even though the profit sharing plan is probably a gimmick; don't discount its importance. It's one of the most potent issues ever to have been cast upon a bargaining table. Here's why:

1. It diverts attention from the abandonment of the short workweek.
2. It will get more support from the union rank and file than would the prospect of a four-day week (which many UAWites are getting anyway—at reduced pay).
3. It will get support from outside groups. Example: Joseph Meier, executive director, Council of Profit Sharing Industries, states: "We're happy to see it because this is the first time that anyone of that union stature has given support to profit sharing."
4. It will switch a lot of public sentiment back over to Mr. Reuther's side.
5. It's flexible—percentages can be adjusted up or down.
6. Most important: It can be traded for numerous other concessions. Evidently, that is Mr. Reuther's strategy.

Means to Other Ends—His real bread-and-butter issues are these: 1. A boost of 5 to 6 per cent in average hourly earnings (now $2.63). 2. Extension of SUB payments for 52 weeks; raise the $25 limit on payments; and put benefits on a daily instead of weekly basis to cover three and four day workweeks. 3. Payment of moving expenses for workers who follow a plant transfer and severance pay for those who don't. 4. An improvement in the cost-of-living formula. 5. A hike in pension payments, coupled with easier eligibility requirements. 6. Added hospital-medical insurance protection.

Opposed—But he'll meet with more management opposition than he did in 1955. Sales were run-



New Inspection Process for Bends and Fittings

Springfield, Ohio, Div., Ohio Steel Foundry Co., uses Magnaglo test unit made by Magnaflux Corp., to reveal surface flaws in return bends and fittings ning high that year; carmakers couldn't afford a costly strike. This year, finished car inventories far exceed the number that could be peddled during a short strike.

The UAW is planning for a strike. Late last month, convention delegates temporarily upped monthly dues from $3 to $8—less than 1 per cent voted negative. The move will boost UAW's strike fund to $50 million by June 1.

Should the 350,000 GM workers strike, the fund would be drained at the rate of $8 million a week the first three weeks, $9 million a week the next five, and $11 million each succeeding week. Comparative figures for Ford: $3.3 million, $3.8 million, and $4.4 million. For Chrysler: $2.26 million, $2.6 million, and $3 million.

Ohio Fights SUB

Here's the problem facing Erskine Maiden Jr., judge of the Mahoning County Common Pleas Court: He has to decide whether it's legal for 170,000 Ohioans to receive Supplemental Unemployment Benefits at the same time they're getting state unemployment pay.

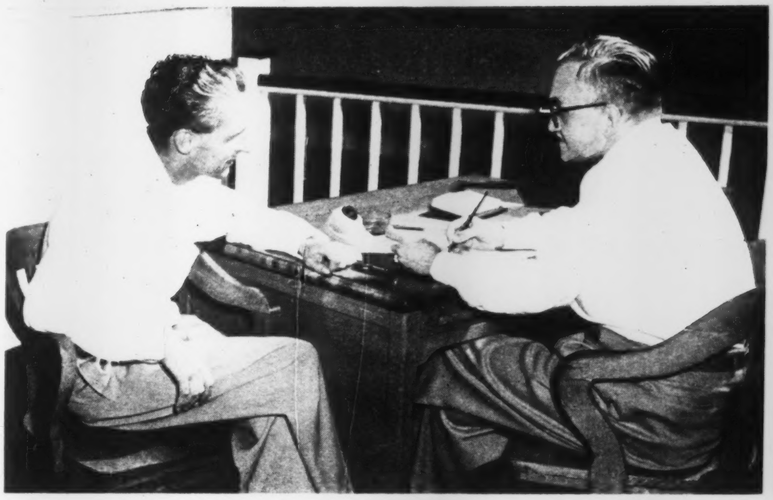
Complicating the test case is this: Four steel firms have been named defendants in the suit brought by the United Steelworkers of America. But the steel companies want the USW to win and have loaned the union some of their top legal talent.

Other defendants include James Tichenor, Ohio Bureau of Unemployment Compensation administrator (who ruled that SUB is remuneration and cannot be received concurrently with state benefits), and other BUC employees.

Arguments—Witnesses for the union, Murray Latimer, Washington labor consultant, and Vincent L. Matera, U. S. Steel Corp. lawyer, contend that SUB isn't remuneration for services but a type of insurance.

Witnesses for the state claim that SUB is remuneration at the time the unemployed worker draws the money from the trust fund.

Deadline—Judge Maiden has set Feb. 18 as the date for final arguments. His decision will probably be appealed to the Ohio Supreme Court.



Counseling helps with one of today's toughest problems . . .

How To Handle Layoffs

ABOUT 275 steelworkers laid off by Bethlehem Steel Co. at Buffalo have temporary jobs at nearby Chevrolet plants—thanks to an arrangement between the United Steelworkers and the United Auto Workers.

The program is unique. Layoffs are still a major problem for management as well as the worker.

Cushion—SUB payments soften the blow. Some 35 per cent of workers in SUB-covered plants are eligible to get SUBenefits that average $15-$17 weekly. Shifting workers from one job to another also helps—if you can do it.

For most firms, layoffs follow the contract procedures, plus the use of as many "humanics" as possible. Crane Co.'s procedure is typical. When production cutbacks are ordered, department heads declare an employee surplus. The personnel department figures which people are affected after seniority rights are established. If those involved can't be shifted to other jobs, they're laid off.

Prepared — The wise company conditions its employees for the blow. It runs house organ stories on business conditions, perhaps even holds advance meetings with the workers.

Crane and most other firms make a practice of meeting with laid-off people individually or in small groups to make sure they know how to file for unemployment compensation or SUB.

Buffalo Plan—The beauty of the Buffalo plan is that it takes the strain off the SUB fund, helps Chevrolet find skilled workers, and keeps the laid-off worker's pay check coming. Put into operation last fall, the program has enabled about 1 of 4 laid-off steelworkers to get on the Chevrolet payroll.

A laid-off steelworker applies for a temporary job at Chevrolet. If accepted, he begins paying UAW dues, but no initiation fee. When recalled as a steelworker, he returns to regular standing in the steel union.

SUB Funds Holding Up—The plan may be extended to other areas. But even where it isn't in effect, the drain on SUB funds has not been serious. They average between 60 and 75 per cent of the maximum funding. The Big Three auto fund amounts to about $145 million.

What's Chances for Trade Act?

OBSERVERS on Capitol Hill report a private poll of the House early in January showed that the Reciprocal Trade Agreements Act would not pass. It expires June 30; the administration is requesting a five-year extension.

The administration is reported willing to settle for a three-year extension, but even a one-year extension remains in doubt. Last week, a meeting of U. S. business leaders at the White House kicked off the President's campaign to publicize our need for better trade relations.

As a sop to protectionists, Ike is also asking that he get the power to raise tariffs under the act's escape clause to 50 per cent above the rates of July 1, 1934.

It's Congress' Biggest Decision

Although defense continues to hold the headlines, high Washington officials and many businessmen contend the extension of the trade act is really the biggest job of Congress this session. It is a foregone conclusion that defense expenditures will be up substantially for the next decade; only the rate of increase remains in doubt. In contrast, poor trade relations could come to a terrific cost, both in domestic stability and our overseas position.

You'll be hearing these figures from administration sources: "Some 4 million persons in the U. S. depend upon foreign trade for a living; only 200,000 workers would be unemployed if we dropped all our protecting tariffs." The administration understands that those 200,000 workers control many important votes in this election year, especially in the lower population states of the West in which protectionist sentiment runs high.

Consensus: Ike may have buried his own trade program when he failed to get a truly "long range" minerals policy through Congress last year. Look for Congress to attempt a patchwork job on minerals this session to satisfy the West and get votes for the trade act.

A Russian Colony in Next Decade?

Warns Dr. Eric Walker, vice chairman, the President's Committee on Scientists & Engineers: "The U. S. public doesn't understand the threat of Russian scientific achievement. Russia's present rate of technological advancement is so superior to ours she may soon conquer us without firing a shot. We need drastic progress in the next decade or we'll become a colony of the communist world."

Dr. Walker has previously reported in STEEL that Russian blast furnaces are producing 2300 tons of metal a day, compared with the average 1700 tons produced by a U. S. furnace. Russia graduates ten metallurgists for every one turned out here. In research, he estimates we lead only in agriculture and the social sciences. He concludes: "The public must understand we are in a race, and we can lose it."

Submarine Program Gathers Speed

Defense Secretary Neil McElroy implies that he may ask for seven more Polaris-firing atomic subs in the fiscal 1959 defense budget. Three are scheduled in the fiscal 1958 budget. A supplementary request will probably go to Congress sometime this spring. Congress continues to try to push the Pentagon even faster, seeking a rate of perhaps ten a year for the next decade. They'll cost around $85 million each.

A boost is also expected in atomic subs which use smaller guided missiles like the Regulus. We'll have 18 atomic subs by 1960 at the present rate of construction.

Democratic tactics on the defense budget now appear to be this: 1. Quick passage of the President's supplemental request of $1.3 billion for fiscal 1958. 2. A move to add over $1 billion to the fiscal 1959 budget when it hits the floor, to anticipate further supplemental requests from Mr. McElroy and give the Democrats credit for a true "sense of urgency." Expect the Rover Project (an atomic powered missile) to receive a healthy boost, too.

BDSA Checks Nickel Purchases

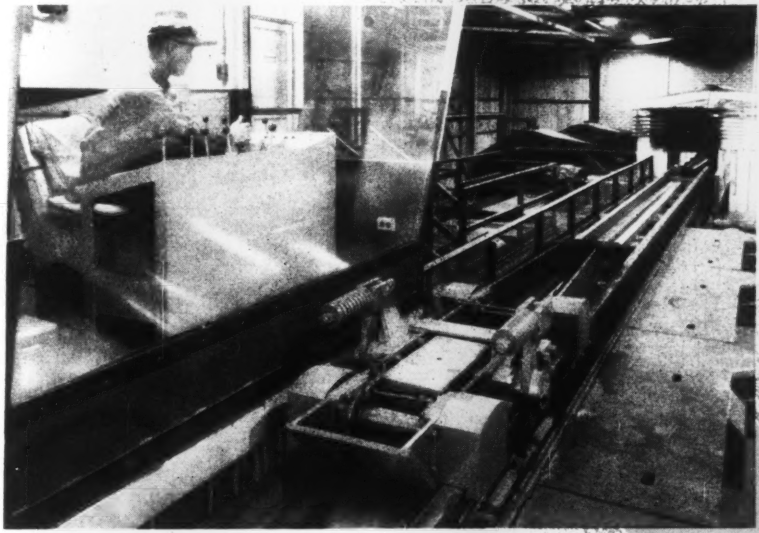
Although there is no shortage of nickel, and none is expected, the Business & Defense Services Administration will keep a closer check on the metal by requiring producers to use ratings when ordering steel, copper, aluminum, and nickel alloys for defense.

"Failure to identify defense orders would create a false picture of the amount of nickel going for defense," comments BDSA.

Straws in the Wind

Sen. Richard Russell (D., Ga.), chairman, Senate Armed Services Committee, wants to step up B-52 production while we await missiles in quantity . . . Synthetic cis-polyisoprene has the same physical and chemical properties as natural rubber, says the Army . . . UAW and IAM handed out 800,000 leaflets last week to missile and aircraft workers to proclaim their joint bargaining program for '58.

MORGAN MILLS
MORGAN QUALITY



from START to FINISH

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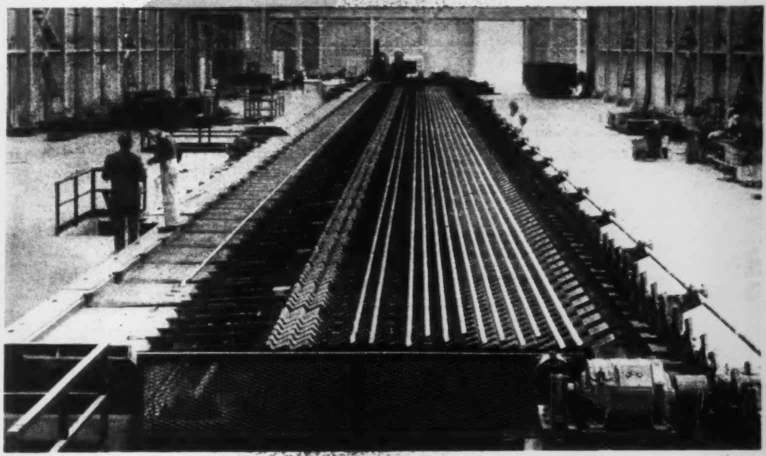
Atlantic Steel Company
Atlanta, Georgia

Morgan engineered and equipped from charging car to cooling bed this new Atlantic Steel Mill is now in full operation. This mill is just one of two hundred and twenty-one Morgan continuous rolling mills which have been purchased by steel plants throughout the world.



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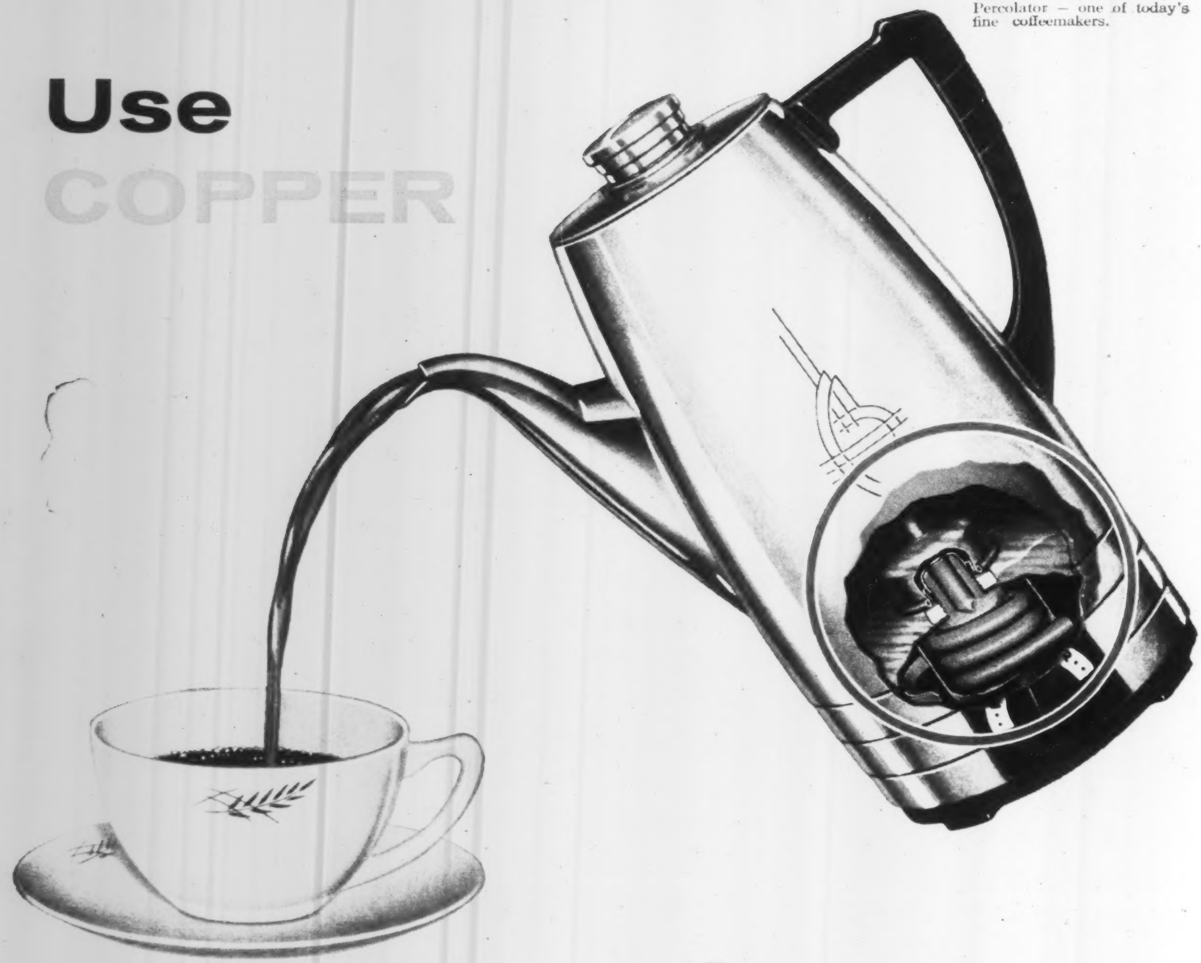

...and your percolator is three ways better

Copper played a big part in making that eye-opening cup of coffee you had this morning. In fact, three of Copper's outstanding advantages are being used in today's superb automatic coffeemakers.

First, Copper's excellent combination of thermal conductivity and corrosion resistance makes it an ideal container for the brew — and the electric heating element. Second, because of Copper's high ductility, it can be shaped in fewer operations, with lower tooling and time costs. Third, Copper adds to the durability and beauty of these appliances, too, taking a brilliant chromium plating easily . . . with nothing underneath that can rust. Or, if Copper's own warm, handsome color is desired, it can be buffed to a mirror polish.

Combined, these three forms of usefulness are unmatched by any substitute for Copper.

If you're a manufacturer, you will find exceptional workability in Copper and its alloys. They are easier to machine, form, draw, stamp, polish and plate. Count on Copper in your future — the industry's reserves are now at a record high, productive capacity is stronger than ever!

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in over 40 Standard Alloys!

For information on the above or any other application of Copper, write to the Copper & Brass Research Association, 420 Lexington Ave., New York 17, N. Y.

An employee of P. R. Mallory & Co. Inc., Indianapolis, unloads flanged bushings made of powdered iron alloys from a sintering furnace. The company says it can make dense structural parts from inexpensive raw materials, eliminating costly multiple pressing and sintering operations

Powdered Metal Parts Gain

ALTHOUGH they have little to cheer about at the moment, producers of powdered metal parts think 1958 will be a good year. They're expecting a poor first quarter, a better second quarter, and a greatly improved second half.

"Our business is coupled to the economy just as tightly as it could possibly be," explains Kenneth M. Gleszer, executive vice president of Dixon Sintaloy Inc., Stamford, Conn.

There are about 40 independent fabricators of powdered metal parts and 20 captives, estimates the newly organized Powder Metallurgy Parts Manufacturers Association, Pittsburgh. They make self-lubricating bearings and structural parts for motor vehicles, motors, generators, measuring and dispensing pumps, construction equipment, aircraft, office machines, vacuum cleaners, laundry equipment, sewing machines, blowers, fans, air pumps, gages, compressors, and other equipment.

Metals — Most frequently used today are iron, copper, brass, bronze, alloy steels, aluminum, and titanium. The industry's sales were between $75 million and $88 million last year, says Kempton Roll, executive secretary of the Metal Powder Association, New York.

"There have been no great or fascinating breakthroughs," Mr. Roll continues. "Most significant has been the steady progress in the direction of larger parts, made possible by improvements in presses, pressing techniques, and powders."

R. C. Burgess, head of the powder metallurgy department at Burgess-Norton Mfg. Co., Geneva, Ill., says it's nice to have a big press (it will make large, complex parts at costs competitive with machining) but it's hard to find work for one. "Customers are skeptical about the physical properties of large parts," he explains. The company is turning out two 2-lb pieces on a 500-ton press built by Baldwin-Lima-Hamilton Corp. — a bevel transmission gear for the lawn mower industry and a rotor for a vane type air compressor.

New Materials—"We're processing lots of stainless steel, nickel-silver, and Monel," says E. D. Shea Jr., advertising manager of Keystone Carbon Co., St. Marys, Pa. "We're also working with titanium and aluminum on a project basis."

Stainless—G. W. Trichel, president of Chrysler Corp.'s Amplex Div., Detroit, expects increased use of stainless powders this year. W. L. Batten, metallurgist of Vanadium Alloys Steel Co., Latrobe, Pa., agrees: "There will be a greater demand for high capacity, lightweight filters—especially in aircraft, where heat resistance is so important. High temperature alloys may also be used for blades and other parts of gas turbines."

Less enthusiastic about stainless is Dixon Sintaloy's Mr. Gleszer. He feels that the powder is now too costly (over $1 a pound) for widespread use. In addition, he claims that it's more abrasive and harder to compact than other materials, doesn't have too good strength after compacting, and requires special care in sintering. Once the problems have been solved, he sees extensive use for stainless powder in making parts that would otherwise require plating.

Titanium—Keystone Carbon Co. has "pilot production possibilities" for titanium. Says Mr. Shea: "We feel that we have a practical process. Others have tried hot molding, which necessitates final machining, but we use a more conventional method. We try to produce sintered titanium parts in finished form."

Higher Densities—"The best opportunities for powdered metals are being opened up in the area of high strength parts," says a large eastern bearing producer. Taking exception to the view, S. S. Connor, vice president of Bound Brook Oil-Less Bearing Co., Bound Brook, N. J., says: "We question the economics of these high density parts. Production costs are much higher than for conventional materials because of the need for repeated pressing, sintering, and annealing operations. In today's market, they have little margin over machined pieces, castings, and forgings. Most of the high density parts are being made by captives, who may not know their costs."

In rebuttal, J. R. Powers, general manager of Supermet Div. of Globe Industries Inc., Dayton, Ohio, asks: "Why do companies like IBM, National Cash Register, and Pitney-Bowes have to produce their own high density parts? Only because the independents wouldn't do it for them. We make high strength parts for a cost-conscious parent. We know our costs, and we know we saved money and improved quality when we switched to high density production."

Problems—Foremost among the problems facing powder metallurgy is the industry's lack of standards. "As it is now," says one producer, "competing companies can work from the same specifications and produce parts with different properties and dimensions." The Powder Metallurgy Parts Manufacturers Association hopes to correct the deficiency by establishing standards for composition, physical properties, and testing methods.

Equally disturbing has been the trend toward lower profits. A major parts manufacturer charges that some of his competitors quote prices that hardly cover their costs. Another producer attributes price cutting to the low bidder's misunderstanding of his customer's requirements.

What Your Bank Wants

Annual Report
SALES
FUNDS

Now's the Time To Borrow

As money loosens even more during this half, you'll find bank loans easier to get; you'll pay less interest; and bankers will be more agreeable to term contracts

METALWORKING companies will find dollars more available from banks during the first half as the economy does a quick about-face and heads further into a borrowers' market.

Banks still report a high level of business. Examples: 1. Chemical Corn Exchange Bank, New York, says its outstanding loans at the end of 1957 totaled $1,468,755,110, vs. $1,482,564,788 on the same date in '56. 2. Figures of J. P. Morgan & Co. Inc., New York, read $385,196,102, vs. $390,961,831 in '56.

Dip — But the amount of new loans dropped sharply in the past few months. From July 1 through Dec. 31, outstanding loans to metalworking companies by all U. S. banks decreased by $601 million, says William Butler, vice president of Chase Manhattan Bank, New York.

Consensus: New loans will continue to decline this half. Reasons: 1. Softness in business. 2. Reduction of inventories. 3. Less capital expansion. Effect: A drop in demand for loans.

Stimulant—Late last month, major banks lowered the prime rate (interest charged choice customers) from 4.5 to 4 per cent to counter slumping demand.

That move closely followed the Federal Reserve Board's decision to drop the discount rate (interest on loans to member banks) from 3 to 2.75 per cent at its Philadelphia bank. Other FRB banks are following suit.

Bank officials figure the greater

To Know

COMPANY: Its position in the industry, chances for growth, reputation, product.

MANAGEMENT: Ownership, experience of top officers, training programs.

NEEDS: How the money will be used, how it will be repaid, credit history.

FINANCES: Financial statements, comparison with other firms in field, how books are set up.

ASSETS: Composition of receivables, collection policies, selling terms, inventories.

LIABILITIES: Provisions for warranties and taxes, payment of bills.

DEBT: Creditors, sinking fund requirements, long term debt agreements.

availability of money for industrial loans is a stimulant to borrowing. But the major source of money is savings, which are declining. R. W. Pressprich & Co., New York, reports savings fell from $15.7 billion in 1957's first half to $14.8 billion in the second. Estimate for the first half of 1958: $14.1 billion.

The solution, observers agree, is for the FRB to lower its reserve requirements. Currently, banks in New York and Chicago must keep 20 per cent of their deposits in escrow (it's 18 per cent in other Federal Reserve cities, 14 per cent in smaller towns). If the New York requirement were cut back to 18 per cent, it would release an additional $500 million.

Opportunity — Lower interest rates and easier money make this half a good time for metalworking firms to borrow. It's especially promising for companies that want long term loans for capital expansion.

In times of tight money, banks prefer to make short period loans for inventory accumulation (about 70 per cent of all industrial bank loans fall into this category). They'll seldom grant credit for longer than two years, though there are some exceptions.

Banks are now eager to make term loans. Interest rates being quoted by New York bankers run from 4 to 7 per cent, with the average around 5 per cent. Tip: If money becomes even easier, banks will be more inclined to quote charges at the lower end of the interest scale. The smart company will shop around before committing itself.

Caution—Just because credit has eased, don't take a bank loan for granted. You'll find it much easier to borrow, but you'll still have to measure up to bank standards in two categories: 1. Your ratio of current assets to current liabilities. 2. Your past credit performance.

Banking people complain that many firms aren't prepared to discuss their financing when they come to a bank. Charles P. Hawkins, vice president of Trundle Consultants Inc., Cleveland, backs up this viewpoint. "Most people go to the bank with insufficient information. Banks are impressed with the company that brings along a well organized presentation."

Mr. Hawkins says it should include information on: 1. Management. 2. Present products and product development plans. 3. Present and potential markets. 4. Current earnings, operating, and cash flow statements. 5. A breakdown showing where borrowed money will go. 6. How the loan will be paid off. 7. A pro forma balance sheet and operating statement.

Also be prepared to give the bank specific information on things ranging from inventories to finance. (See the checklist at left. It's an abbreviated version of the credit checklist used by a major New York bank.)

Outlook—The next six months will be favorable to borrowers. Look for the FRB to lower reserve requirements. This action, plus less demand for money, will make loans much easier to get. The Pressprich company estimates demand for capital will decline from about $16.6 billion in the second half of 1957 to $15.7 billion in this year's first half.

Metalworking companies will find it easier to borrow at the prime rate, which may drop even lower. Banks will lend larger amounts and allow longer payback periods.

After midyear, money may start tightening again. Says a large New York bank: "One reason loan demand fell off was the curtailment in defense orders. We look for a resurgence in defense orders later this year, which could have a tightening effect on the money market."

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.*

To Spend $11 Million

American Steel Foundries, Chicago, expects to spend $11 million for plant additions in 1958. It spent about $8.8 million in 1957. The firm does not anticipate a need for outside financing.

The largest sum will be for two new steel wheel plants—one at Griffin Wheel Co., Muncie, Kans., and one at Griffin Steel Foundries Ltd., Transcona, Canada. Both will be completed in 1958.

THE HEAVIER THE LOAD...

the more you need HYATTS . . . because nothing else can equal straight cylindrical roller bearings for sheer load-carrying capacity. That's why many of the world's largest crawler tractors are equipped with HYATT Hy-Rolls.

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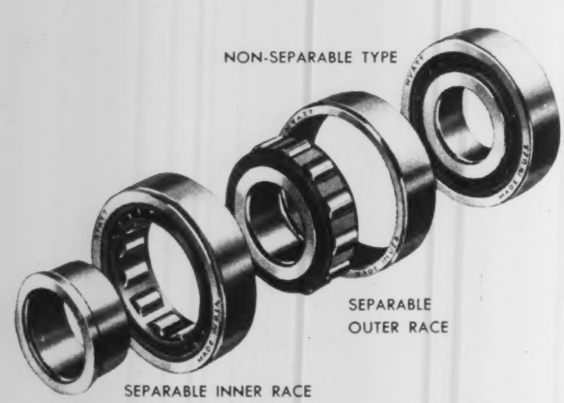
the more you need HYATTS . . . because they are precision-built with painstaking control of internal clearances to run smoothly even at 40,000 rpm, as in this Solar portable gas turbine pump developed for fighting fires.

THE MORE YOU NEED *Cylindrical* HY-ROLL BEARINGS



Heavier loads and higher speeds, which must often be accommodated in more compact housings than ever before, are causing problems for many a design engineer these days. If you're among those who are finding that previously-used bearings are no longer good enough, *it's time to switch to HYATTS.* In America's most complete line of straight cylindrical roller bearings you'll find space-saving separable types with ample capacity to carry your radial loads, or flanged race types which will take a surprising amount of thrust. When you lay in HYATT Hy-Rolls you make *sure* of longer, smoother performance at the lowest cost per hour of service. Ask your nearest HYATT Sales Engineer for recommendations—you'll find him mighty helpful! Hyatt Bearings Division, General Motors Corporation, Harrison, N.J.; Pittsburgh; Detroit; Chicago; and Oakland, California.

THE RECOGNIZED LEADER IN CYLINDRICAL BEARINGS

1908–1958
FORWARD FROM FIFTY

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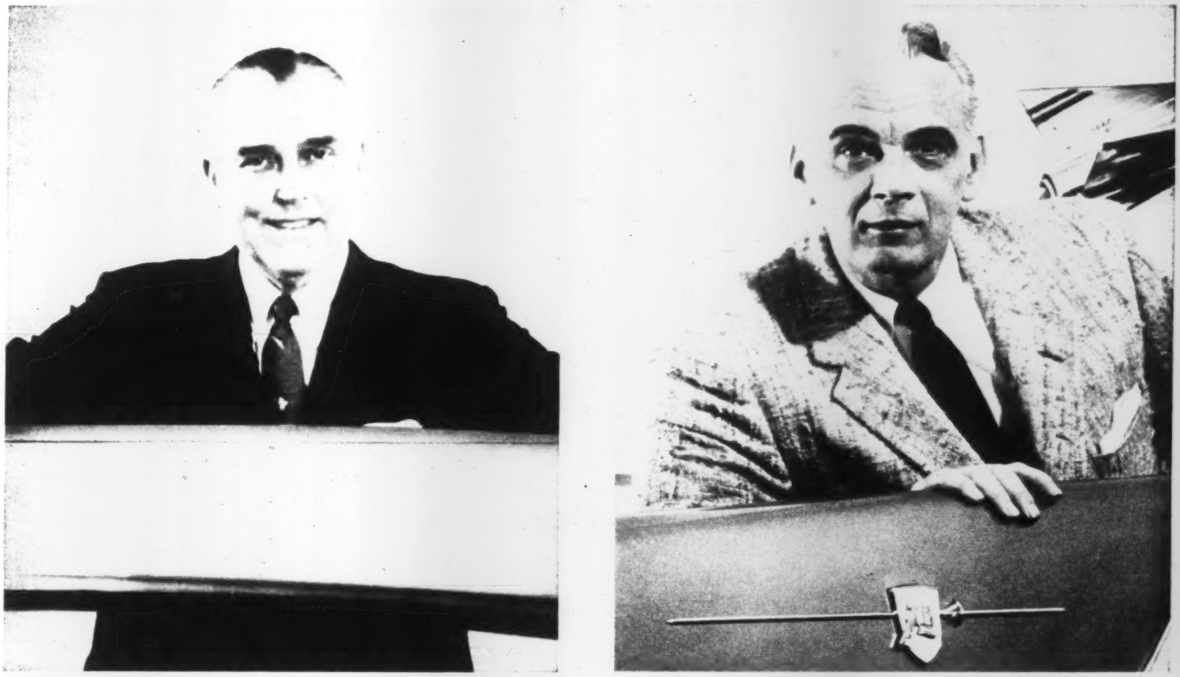

President L. L. Colbert (left) decides to keep Designer Virgil M. Exner's '57 styling as . . .

Chrysler Gambles in '58

SALES RATES are down for the corporation, but Chrysler reportedly can show a profit if it takes 15 to 16 per cent of a 5.7 million to 5.8 million car market in 1958.

L. L. Colbert, Chrysler's president, doesn't sound too concerned. He says: "We're not selling at the same rate as we did last year, (but) I believe 1958 will be good."

Sales Slip—Last year, Chrysler averaged better than 17 per cent of the market with its 1957 models, vs. 15 per cent in 1956. This year, the firm has made only a slight facelift and sales slipped to 14.5 per cent of the market in November and December, although they climbed back to 16.5 per cent in the first half of January.

According to several company sources, Chrysler figured there would be less demand for its '58 and '59 models. Consequently, the company set up tool amortization so most of the tooling would be paid off in 1957. With lower costs this year and next, Chrysler doesn't have to sell as many cars to maintain its profit level.

Takes Chance — That means Chrysler's gamble was that 1958-59 sales will be high. It was conceding that a lack of style change would cut its share of the market, but its total would still be respectable in high sales years. Under that theory, 1959 cars were scheduled to receive only moderate revamping.

But now the sales prospects aren't so promising. The industry is pruning production to keep dealer stocks below the present 800,000 units. Signs are turning up to indicate Chrysler will restyle its '59 models more extensively than first planned to boost its share of a smaller market. Plymouth Div. will scrap its '59 front end design (a minor revision) and plans a major front facelift featuring a new grille. Dodge, De Soto, and Chrysler Divisions are expected to follow.

Output Slashed — Chrysler has scheduled a 230,000 car buildup for the first quarter, compared with 370,000 last year. That's 15.4 per cent of autodom's quarterly output forecast, compared with 20.6 per cent the company built in the first three months of 1957. It looks like even these schedules will be slashed as the quarter progresses.

Dodge and De Soto divisions are particularly hard pressed. Unofficial company reports indicate both are roughly 30 per cent below year-ago levels and 15 per cent under what the company planned

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on. Plymouth, Chrysler, and Imperial reportedly are holding closer to schedules even though their output is below '57 rates.

Cuts Costs—With sales and production down and dealer stocks up, Chrysler is in a position to further reduce costs by adjusting work standards through layoffs and by closing down some operations.

The company always has had trouble with work standards. The industry figures that Chrysler takes 7 to 14 more manhours than Ford or General Motors to produce a car. Its efforts to remedy this disadvantage have been a basic reason behind most of last year's wildcat walkouts. But the company apparently plans to cut back this year, regardless of reprisals.

Chances Strikes — Two weeks ago, one division lopped off 7 manhours from the time needed to make a car.

The union has threatened to strike, but a UAW official privately admits it's a futile gesture. A company official close to the scene tells why: "We have more cars than we need right now."

Another personnel man indicates Chrysler's total hourly workforce has been cut at least 25 per cent below last year's. Some salaried personnel are getting the axe, too. The corporation also reports it is closing its Youngstown stamping plant to save money.

Such cost cutting efforts will help hold up profits. So will the added defense business Chrysler has picked up from its Jupiter missile contract. The firm has just formed a missile division to handle Jupiter and Redstone projects.

Needs Dough—Chrysler has set certain profit goals for the next two years to enable it to carry out future projects. The company hopes to introduce unitized construction on its 1960 bodies.

But the company may have to postpone this program if income doesn't reach scheduled levels. The decision reportedly has to be made before the second half, or there won't be enough time left to tool up for the change.

Big Plans—Another problem facing the company is what to do about a small car. Mr. Colbert says Chrysler is studying the possibility of marketing a European built job and also of making a newly designed American built small car.

Chrysler has confirmed to STEEL that it is dickering with Kaiser Industries Corp. and its wholly owned subsidiary, Willys Motors Inc., Toledo, Ohio. The plan is to have Willys-Overland Export Corp. (Willys Motors subsidiary) market Plymouths in Brazil where the Jeep producer is a major marketeer.

Still officially unconfirmed is the report that, in return, Kaiser-Willys will give Chrysler the dies for its Aero car whose short life started in 1952.

The Aero came in three body styles, had a 108-in. wheelbase, weighed about 2570 lb, and was priced between $1500 and $2000. Just as American Motors Corp. revived the 100-in. Rambler, Chrysler could bring back the Aero.

Outlook — Projects like those take money. Chrysler has bet its Forward Look styling is good enough to last three years without major changes. Part of the gamble has already crapped out with Plymouth's '59 revision.

If Mr. Colbert's crowd has refigured the market correctly, the new plans still can materialize on time. If not, Detroit talk has it that there will be some top management changes.

U. S. Auto Output

Passenger Only

	1957	1956
January	642,089	612,078
February	571,098	555,596
March	578,826	575,260
April	549,239	547,617
May	531,365	471,673
June	500,271	430,373
July	495,629	448,876
August	524,354	402,575
September	284,265	190,726
October	327,362	389,061
November	578,601	580,803
December	534,716	597,224
Totals	6,107,815	5,801,862
Week Ended	1957	1956
Dec. 28	79,945	99,577
	1958	1957
Jan. 4	76,653	91,130
Jan. 11	120,140	147,129
Jan. 18	109,761	145,761
Jan. 25	110,012†	145,191
Feb. 1	108,000*	140,411

Source: *Ward's Automotive Reports.*
†Preliminary. *Estimated by STEEL.

AMC Shows Profit

American Motors Corp. is in the black with a $4.9 million net profit for its first fiscal quarter ended Dec. 31, 1957. This equals 88 cents a share and compares with a loss of $2.99 million for the same period a year ago.

"The showing for the year as a whole is not expected to be maintained at the same rate as the initial fiscal quarter, but a substantial profit for the year is indicated," says George Romney, AMC president. Other sources indicate the company is aiming at a $9 million profit for fiscal '58.

Retail sales for the quarter went up about 35 per cent (35,668 units) from year-ago levels of 26,327 cars. Production reached 41,492 units, compared with 28,021 in the first fiscal quarter of 1957.

Ford Has Record Payroll

Ford Motor Co.'s employment and payroll during 1957 were the highest for any year in the company's history, reports John S. Bugas, industrial relations vice president.

During 1957, an average of 191,759 hourly and salaried employees earned $1.2 billion. In 1955, 181,616 employees earned $1.1 billion. Last year's earnings totaled $1 billion; the average number of workers was 178,061.

Gross hourly earnings of nonsalaried workers averaged $2.59. Average weekly earnings were $106.09. Ford's average workweek in 1957 equaled 40.9 hours, compared with 41.5 last year and 44.1 in 1955.

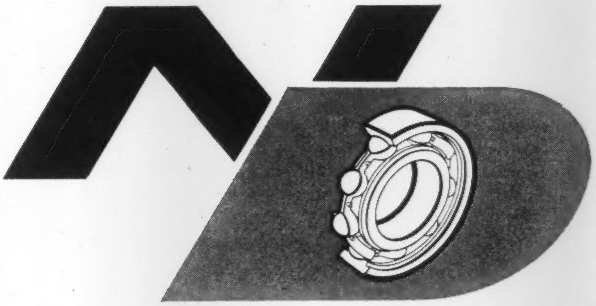
Exhaust Notes

- Buick and Oldsmobile reportedly are returning to the 15-in. wheel with low profile tires in 1959. The switch may raise the height of the car ½ in., but the industry has not been able to develop inexpensive brakes which will work satisfactorily with the 14-in. wheel.
- Chevrolet has released over 30,000 orders for parts for a small car through its Holden operation in Australia. Chevy figures it will be ready if U. S. manufacturing seems advisable. Otherwise, it can always claim the releases were for Holden in the first place.

NEW DEPARTURE

NEW DEPARTURE

NEW DEPARTURE



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. . . a reputation for integrity, for quality and service . . . for advanced creative engineering achieved by New Departure in over half a century of precision ball bearing manufacture.

You'll find this emblem is also symbolic of our determination to continue, in the fullest measure, all those factors which have built that reputation. It is a visual pledge of this resolution to all our customers, present and future.

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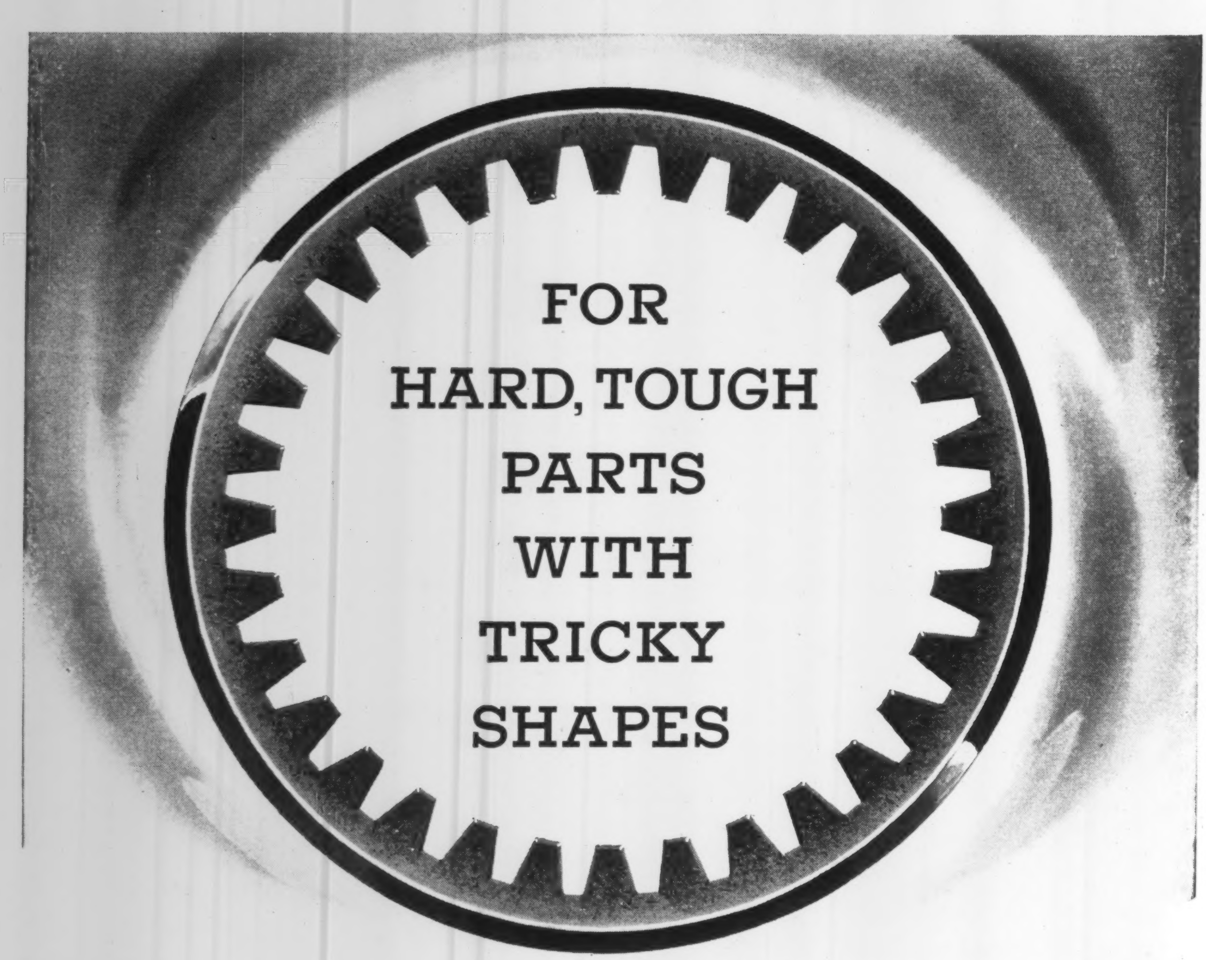
1908–1958
GM
FORWARD FROM FIFTY

NEW DEPARTURE

DIVISION OF GENERAL MOTORS—BRISTOL, CONN.



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The fully spheroidized structure of Timken 52100 steel makes machining easy—at no sacrifice in strength or hardenability. It's a high carbon chromium analysis of fine alloy steel with high fatigue and tensile strength, and good hardenability throughout its cross-section.

Timken 52100 steel withstands working pressures up to 200,000 p.s.i. It can be oil-quenched to a hardness of 65/66 Rockwell C. You can depend on uniform quality in every shipment, because we control quality through every production step—from furnace to final inspection.

The Timken Company is the only source of 52100 steel in all three finished forms—bars, tubing and wire. To meet your small run requirements and emergency needs, we stock tubing in 101 sizes—from 1″ to 10½″ O.D. We pioneered the production of 52100 tubing in America and we're the largest domestic producer. Write for a full list of sizes, grades and finishes available. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

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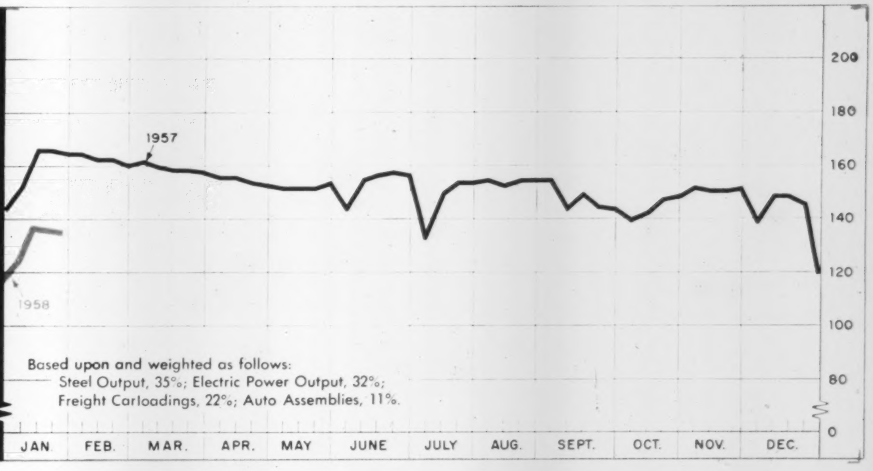
STEEL

INDUSTRIAL PRODUCTION INDEX

(1947-1949=100)

LATEST WEEK	137*
PREVIOUS WEEK	138
MONTH AGO	119
YEAR AGO	165



Based upon and weighted as follows:
Steel Output, 35%; Electric Power Output, 32%;
Freight Carloadings, 22%; Auto Assemblies, 11%.

*Week ended Jan. 25.

Consumers Have Buying Power To Turn Tide

WHEN ANALYZING the prospects for a business upturn later this year, don't overlook the consumer. He's still in a position to call the turn, just as he did in 1954.

A combination of relatively high personal income, prospects of substantial wage increases in key industries, and a leveling off in the inflationary spiral could be a potent force in the upturn. Contrary to what many think, purchasing power in general is still pretty strong. True, the situation is not good for some groups in metalworking. But when you take a wide-angle look, here is what you see:

Personal Income—The latest report—for December—put the annual rate of personal income at $343 billion. Since the record high of $346.8 billion in August, the figure has dropped only 1.1 per cent. This trend will continue at least through the first quarter, but it isn't likely to accelerate.

Takehome pay of factory workers is also holding at pretty high levels. In December, net spendable earnings remained at the November rate of $75.40 a week, only $1.14 under the corresponding year-ago figure. The average hourly wage for factory workers is also high—$2.11. This figure will continue to grow, but the shorter workweek will counterbalance the gain.

Another big source of income—corporate dividends—set another record last year at $11.5 billion. Fourth quarter payments fell below the year-ago figure largely because of smaller extra dividends at yearend. This year as a whole will probably be as good as 1957 for stockholders, although first quarter payments may turn out to be the lowest.

Employment — Unemployment won't get much worse, indicates a survey by the Department of Labor. Seasonal advances will be noticed through March, but they will

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,479[1]	1,496	2,498
Electric Power Distributed (million kw-hr)	12,300[1]	12,400	12,410
Bituminous Coal Output (1000 tons)	8,450[1]	8,700	9,925
Crude Oil Production (daily avg—1000 bbl)	6,875[1]	6,925	7,396
Construction Volume (*ENR*—millions)	$218.9	$219.9	$222.1
Auto, Truck Output, U. S., Canada (*Ward's*)	134,133[1]	136,505	178,550
TRADE			
Freight Carloadings (1000 cars)	570[1]	572	666
Business Failures (Dun & Bradstreet)	260	324	278
Currency in Circulation (millions)[3]	$30,878	$31,207	$30,827
Dept. Store Sales (changes from year ago)[3]	+3%	+1%	+2%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$23,464	$23,302	$23,247
Federal Gross Debt (billions)	$274.7	$274.5	$276.2
Bond Volume, NYSE (millions)	$33.1	$25.6	$20.3
Stock Sales, NYSE (thousands of shares)	11,621	12,098	10,498
Loans and Investments (billions)[4]	$87.0	$87.0	$86.5
U. S. Govt. Obligations Held (billions)[4]	$25.9	$26.1	$26.8
PRICES			
STEEL's Finished Steel Price Index[5]	239.15	239.15	225.92
STEEL's Nonferrous Metal Price Index[6]	200.7	201.2	252.3
All Commodities[7]	118.8	118.7	117.0
Commodities Other than Farm & Foods[7]	126.0	126.0	125.2

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*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1958, 2,699,173; 1957, 2,559,490. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

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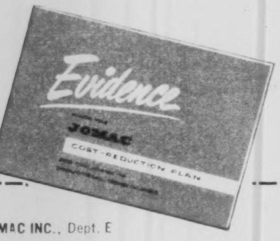

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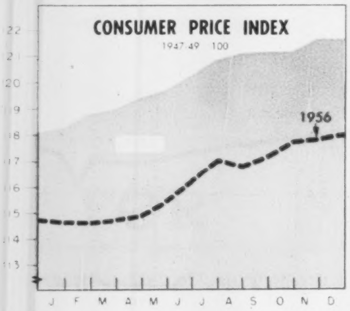
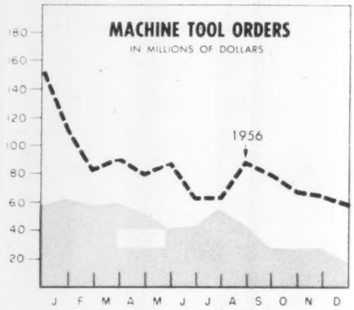
THE BUSINESS TREND



	1957	1956	1955
Jan.	118.2	114.6	114.3
Feb.	118.7	114.6	114.3
Mar.	118.9	114.7	114.3
Apr.	119.3	114.9	114.2
May	119.6	115.4	114.2
June	120.2	116.2	114.4
July	120.8	117.0	114.7
Aug.	121.0	116.8	114.5
Sept.	121.1	117.1	114.9
Oct.	121.1	117.7	114.9
Nov.	121.6	117.8	115.0
Dec.	121.6	118.0	114.7

U. S. Bureau of Labor Statistics.
Charts copyright, 1958, STEEL.



(Thousands of dollars)

	New Orders		Shipments	
	1957	1956	1957	1956
Jan.	63,250	109,550	76,550	54,600
Feb.	58,200	81,300	77,700	64,600
Mar.	58,900	89,500	89,100	74,150
Apr.	51,300	79,300	87,800	71,800
May	41,400	87,100	76,500	76,800
June	43,100	61,850	82,950	76,250
July	55,500	61,900	58,700	65,150
Aug.	44,500	87,500	63,200	75,100
Sept.	28,800	78,450	64,750	71,100
Oct.	27,800	66,100	60,900	89,750
Nov.	28,350	64,250	47,600	81,700
Dec.	18,650*	57,200	55,450*	85,150
Totals	519,750*	924,000	843,200*	886,150

*Preliminary.
National Machine Tool Builders' Assn.

be fractional—the total will be close to 4 million, or about 5.7 per cent of the civilian labor force. By comparison, unemployment in January, 1957, was 3.2 million, or 4.8 per cent of the labor force.

There is one big difference between unemployment now and in 1954. Many people laid off temporarily are collecting SUB payments which they did not have four years ago. SUB does not add to their purchasing power, but it prevents it from dropping to nothing.

Rainy Days—Another aid during this lull will be record personal savings. During the first three quarters of 1957, individuals saved $3 billion more than they did in the corresponding 1956 period. With credit becoming more readily available, this means of supplementing buying power will probably be used at a little faster clip.

Higher Wages Coming—Despite the stability of the consumer price index during December (see chart, above), about 650,000 workers will get pay boosts because of previous changes in the cost of living. Add to these the substantial wage hikes scheduled for major industries this year and the net result will be higher buying power.

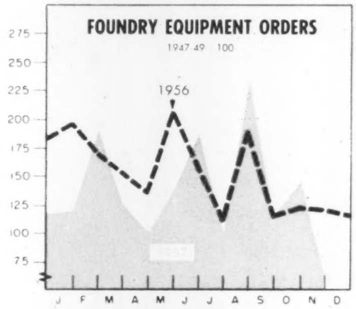
That the consumer is still in a spending mood is evident from weekly sales figures of department stores. For six consecutive weeks, sales have held above the year-ago levels. And indications are that spending for services is continuing to expand. The annual rate went up about $1 billion during the fourth quarter.

Construction Will Help

After setting a dollar value record in 1957, the construction industry is expected to help in the comeback this year. Construction contracts last year totaled $32.2 billion, 2 per cent ahead of 1956's, reports F. W. Dodge Corp., New York. Both residential and nonresidential building topped that of 1956 by 1 per cent.

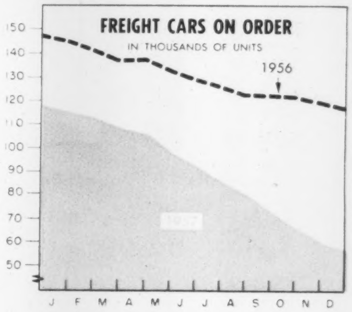
Further gains are anticipated for residential construction this year, Albert M. Cole, federal housing administrator, told the National Association of Home Builders. Unless the international situation takes a turn for the worse, housing starts this year will increase 10 per cent over the 989,100 total in 1957.

One Cleveland builder told STEEL: "Seven or eight months ago, lending institutions refused to even listen to us. Now they are



	1957	1956	1955
Jan.	117.9	195.6	81.0
Feb.	188.4	169.0	90.4
Mar.	127.0	152.7	163.6
Apr.	101.1	135.2	178.6
May	136.2	207.0	145.7
June	187.5	156.7	186.8
July	98.6	110.3	213.4
Aug.	231.3	188.3	134.0
Sept.	113.9	114.7	156.7
Oct.	145.3	122.2	108.6
Nov.	59.6	121.0	154.4
Dec.	....	115.6	183.9
Avg	....	149.0	150.0

Foundry Equipment Mfrs. Assn.



	Awards		(end of month)	
	1957	1956	1957	1956
Jan. ..	5,328	1,818	114,656	144,946
Feb. ..	6,065	1,675	111,965	141,437
Mar. ..	5,359	1,618	107,708	137,070
Apr. ..	6,429	6,559	105,190	137,436
May ..	3,423	2,403	97,006	133,072
June ..	4,918	2,859	91,810	129,409
July ..	1,251	2,642	85,229	126,194
Aug. ..	3,203	2,575	79,258	122,870
Sept. ..	3,257	3,949	71,981	122,421
Oct. ..	2,206	6,532	65,718	122,250
Nov. ..	1,070	4,172	59,194	119,626
Dec. ..	3,492	4,992	55,941	117,320
Total .	42,051	41,794		

American Railway Car Institute.

coming around to take us to lunch and talk over loans. We expect to do better this year than last."

Capital Goods Outlook Dim

Capital goods producers have no grand illusions about near future business conditions. Reports indicate the long leadtime industries will be off for another few months:

Machine tool orders in December hit an eight-year low of $18,650,000, says the National Machine Tool Builders' Association. (See chart, Page 82.) Shipments totaled $55,450,000. (For more details, see Page 66.)

The Foundry Equipment Manufacturers Association says the index for net new orders plummeted to 59.6 (1947-49 = 100) in November, the lowest level since this base period has been in use. (See chart, above.)

In December, orders for industrial furnaces showed an improvement over November, but at $3,992,000 they were still 32 per cent below the year-ago figure. For all of 1957, new orders amounted to $55,005,000, down 31 per cent from the 1956 figure (see Page 65).

The Resistance Welder Manufacturers Association reports that new orders in December picked up to $1,500,478. But the year lagged almost $20 million behind 1956.

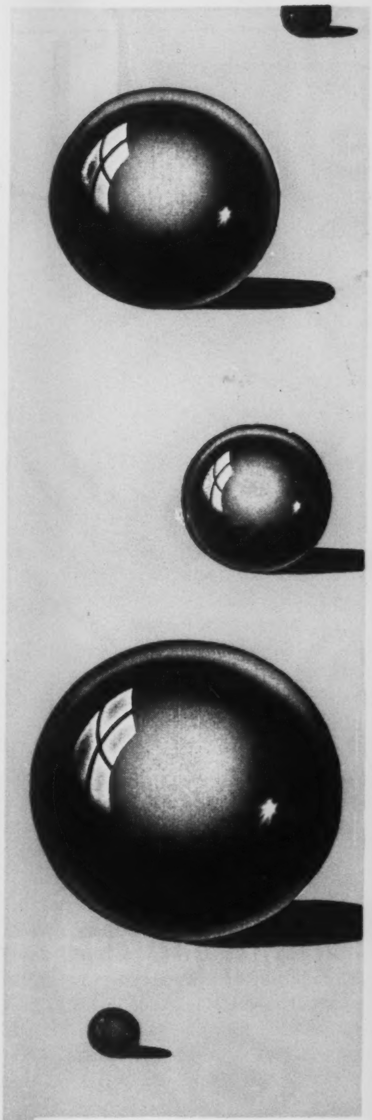
On a little brighter note, the Association of American Railroads announces that 1957 was the second best year for delivery of freight cars to the roads since 1949. (Record year: 1925.) The total was 99,290. However, the backlog continues to decline as monthly deliveries continue to outrun new orders. (See table, above.)

Production Index Slips

STEEL's industrial production index sagged some during the weeks ended Jan. 18 and Jan. 25 because of declines in electric energy and auto assemblies. For the first time since 1949 (with the exception of some holiday weeks), output of electric energy lagged behind the year-ago pace during the Jan. 18 period.

The slowdown in the important Central Industrial and Pacific Northwest Divisions was largely responsible for the dip.

Auto production is running about 20 per cent behind the year-ago pace; sales are off about 21 per cent, says *Ward's Automotive Reports*.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Ohio Rolls

Carbon Steel Rolls
Flintuff Rolls
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Plants at Lima and Springfield, Ohio

LIMA... Virtually at the center of the steel industry

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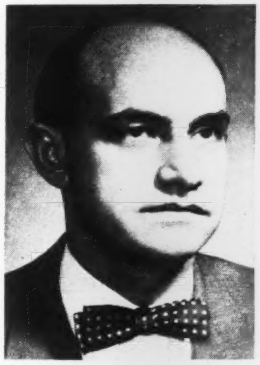
WALTER KASSEBOHM
heads Marchant Calculators



JOSEPH H. CADIEUX
Casting Engineers v. p.

CHARLES W. SANFORD
joins Crouse-Hinds

FRANK J. FIELDS
heads Fosdick Machine Tool

Walter Kassebohm was made general manager, **Marchant Calculators Inc.,** Oakland, Calif. In this post, Mr. Kassebohm becomes the company's chief executive and holds the title of executive vice president and general manager. He was executive vice president-operations. Mr. Kassebohm suceeds **Edgar B. Jessup** as general manager. Mr. Jessup, who retired as president and general manager in December, was appointed chairman of the board.

Joseph H. Cadieux, formerly vice president of Misco Precision Casting Co., was named vice president, **Casting Engineers Inc.,** Chicago. He will direct manufacturing operations, and will supervise the company's forthcoming expansion program.

James E. Hovis was appointed vice president-sales for **F. E. I. Inc.,** Cleveland, formerly Furnace Engineers Inc. He was manager, industrial furnace division, Gas Machinery Co., and previously was vice president-sales, Bloom Engineering Co.

W. P. Clark was named president of **Wall Colmonoy Corp.,** Detroit. **A. F. Wall,** founder and former president, becomes chairman of the board. Mr. Clark was vice president in charge of the Colmonoy Div.

Milton Roy Co., Philadelphia, appointed **John P. Kelmbeth** product engineering manager; **Richard A. Bennett,** chief mechanical research and development engineer.

Charles W. Sanford joined **Crouse-Hinds Co.,** Syracuse, N. Y., as vice president-manufacturing. He will direct and co-ordinate all manufacturing, industrial engineering, production planning, and procurement. He succeeds the late **Albert H. Clarke.** Mr. Sanford was formerly manager of foreign operations for Philco Corp. He was also associated with Jack & Heintz Inc. as vice president-manufacturing.

Arnold R. Johnson was named manager-strapping products and services, **Gerrard Steel Strapping Dept.,** U. S. Steel Supply Div., U. S. Steel Corp., Chicago. He was products manager, Chicago district.

John W. LaRocque was made manager of national sales for **Inland Steel Container Co.,** Chicago. For the last ten years, he served as assistant to the vice president-sales, American Flange & Mfg. Co. Mr. LaRocque will be in New York.

George A. LaCas was made director of the industrial division; **Cyril J. VandeWater,** director of manufacturing of **A-S-R Products Corp.,** New York, formerly American Safety Razor Corp.

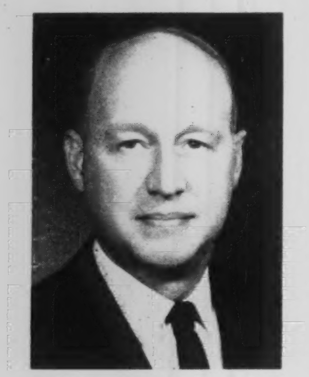
Brooks & Perkins Inc., Detroit, appointed **Harry P. Dunne** to take over former duties of **Charles I. Vogel,** resigned vice president-sales. Mr. Dunne continues as general sales manager. In charge of commercial division sales under Mr. Dunne is **Douglas S. Ferguson,** who continues to supervise the manufacture of commercial products.

Frank J. Fields was elected president, **Fosdick Machine Tool Co.,** Cincinnati, to succeed **Carl E. Linden,** retired. Mr. Fields joined the firm last October as works manager. He was formerly executive vice president and general manager, Sidney Machine Tool Co. Mr. Linden became associated with Fosdick in 1933 and was made president during 1956, concurrent with the company's purchase by R. K. LeBlond Machine Tool Co., Cincinnati.

Carter Kissell was elected president, **National Malleable & Steel Castings Co.,** Cleveland. He takes office as chief executive officer Feb. 10, succeeding **Cleve H. Pomeroy,** who was named chairman. Mr. Kissell has been a partner in the law firm of Jones, Day, Cockley & Reavis. Since 1941, he has been legal counsel for National Malleable.

A. Oram Fulton Jr. was promoted from vice president to executive vice president, **Wheelock, Lovejoy & Co. Inc.,** Cambridge, Mass. **Norman N. Brown,** Cincinnati district manager, moves to Cambridge as vice president. **Richard M. Powers** was made district sales manager, Cambridge; **John J. Humphreys Jr.** was made district manager of orders.

Osborn Engineering Co., Cleveland, elected **Noble W. Herzberg** executive vice president. He was vice president. **Ralph E. Scott,** secretary-treasurer, was elected vice president. **J. Loyal Borton** was


FRANK ASPIN
S. Morgan Smith post

ROBERT E. KENNGOTT
Machine Tool Sales gen. mgr.

MAX B. ROOSA
Parker Rust Proof exec.

KEVIN O'DONNELL
Steel Improvement & Forge post

named secretary; **Elmer C. Juhnke,** treasurer.

Frank Aspin, a sales engineer, was appointed chief production engineer of **S. Morgan Smith Co.,** York, Pa. He is responsible for all phases of production engineering in the turbine manufacturing division.

Robert E. Kenngott was made general manager, **Machine Tool Sales Co.,** Dallas, a division of Tool Supply & Engineering Co. He formerly served with Douglas Aircraft Co. Inc., Tulsa, Okla., division, as machine tool requirements engineer.

Lawrence J. Torn was made chief engineer, **Airborne Instruments Laboratory Inc.,** Mineola, N. Y. He will co-ordinate production design activities for industrial control systems.

Corrulux Division, L-O-F Glass Fibers Co., Houston, appointed **Kenneth G. Peck** engineering and product manager; **Mrs. Barbara Fritz,** sales promotion manager; **Henry M. Bowers,** process control manager.

Chancelor E. Lacy was appointed manager, engineering department, **Hardinge Co. Inc.,** York, Pa. He is assisted by **Henry W. Jacobs,** who was appointed engineering department supervisor. **Walter H. Glomb,** former chief engineer, has retired.

Robert F. Grover was elected president, **Milwaukee Boiler Mfg. Co.,** Milwaukee. **Edward J. Berry** was elected vice president-manufacturing; **Marvin H. Luebke,** sales vice president.

Max B. Roosa, vice president-sales, was elected executive vice president of **Parker Rust Proof Co.,** Detroit.

S. A. Standing was made an assistant to the vice president-general manager of **Raytheon Mfg. Co.'s** receiving tube and semiconductor operations. He continues duties as manager of the cathode ray tube division.

Murray Kanes was appointed director of engineering, **Friez Instrument Div.,** Bendix Aviation Corp., Baltimore.

As assistant sales manager, **Vaughn Monsell** heads a new department to handle sales of tubular steel shoring at **Brainard Steel Div.,** Sharon Steel Corp., Warren, Ohio. **Raymond L. Martz** was made assistant sales manager in charge of Brainard's building products.

Malcolm H. Davison was appointed a development engineer for the applied research and development laboratory, foundry department, **General Electric Co.,** Schenectady, N. Y.

Capt. Frank C. Manville, USN, ret., former administrative manager, transducer division, **Consolidated Electrodynamics Corp.,** Pasadena, Calif., was appointed manager of the division's ceramic products department. He is succeeded by **Fred J. MacKenzie** as administrative manager.

Clayton L. Foster was appointed vice president for international sales by **Austin Co.** He has headquarters in New York.

Kevin O'Donnell was promoted to general sales manager, **Steel Improvement & Forge Co.,** Cleveland. For the last year, he has had a special assignment as manager of orders and schedules. Mr. O'Donnell has been in the sales department since 1947, previous duties including that of sales manager, turbine and engine products.

Glenn R. Lagerstrom was made assistant chief engineer; **Arthur B. Glover,** assistant to the chief engineer, at **Republic Steel Corp.'s** South Chicago steel plant.

Victor Holt Jr., vice president and tire sales manager, **Goodyear Tire & Rubber Co.,** Akron, was elected vice president-sales. **R. S. Wilson,** executive vice president and sales director, retired.

George D. Cowie was made assistant chief engineer, **Plymouth Div.,** Chrysler Corp., Detroit.

Thomas J. Gorman was promoted to assistant to the works manager, special assignment, at the West Leechburg, Pa., Works of **Allegheny Ludlum Steel Corp. J. B. Atwood** fills Mr. Gorman's former post of manager of industrial relations.

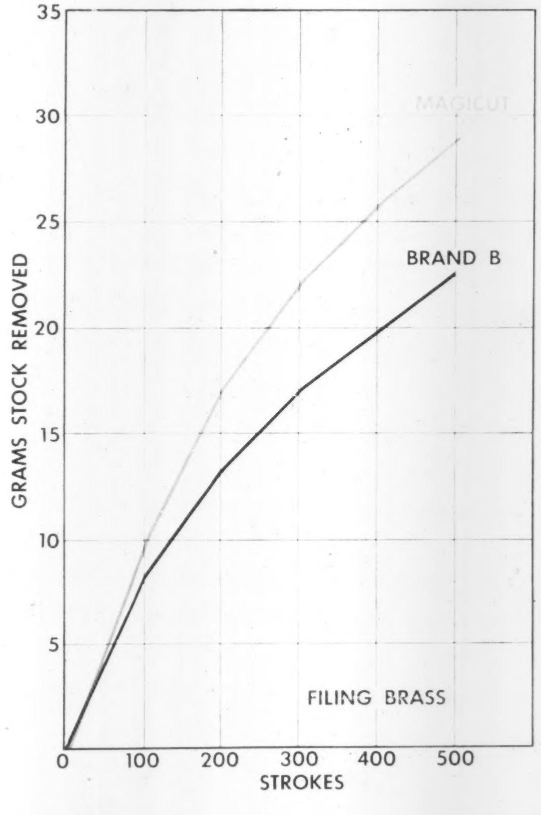
V. W. Vaurio was named metallurgical engineer-tin plate, a new post at U. S. Steel Corp.'s **Tennessee Coal & Iron Div.,** Birmingham. He was chief research engineer at the corporation's research center at Monroeville, Pa.

Raymond G. Considine was named sales engineer, marine and industrial hardware division, **Brewer-Titchener Corp.,** Cortland, N. Y. He

Laboratory report:

New "Magicut" file outperforms other types by wide margins on varied industrial metals

Only way to prove what the new Nicholson or Black Diamond "Magicut" All-purpose Machinist's file will do for you is to try it in your plant.



But we've conducted some laboratory tests. Results of these will give you an idea of the savings you can expect with this unique new file. We compared "Magicut" with all kinds of Machinist's files—old and new, ours and others. (Of course these were *hand* tests.)

In just one part of these trials—comparing our new file with another described as being similar in purpose—we found these percentage superiorities for "Magicut": 28.8% over Brand "B" on brass (shown in chart) . . . 24.7% on aluminum . . . 16.2% on magnesium . . . 15.4% on .70 carbon steel . . . and 11.4% on copper. *And these figures have been confirmed in the field.*

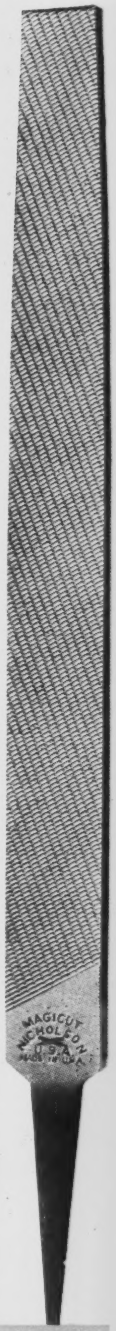
There's not another file that can cut your metal filing costs like the Nicholson or Black Diamond "Magicut" can. Because not another file has the "Magicut's" Penetrating Planer-type Teeth. These rough and smooth industrial metals in a single stroke. You need fewer files—fewer strokes per job.

"Magicut" is the cost-cuttingest file you can use. Available right now in Flat, Half Round and Square shapes . . . 8", 10", 12" and 14" lengths. See and try "Magicut" soon.

FREE! Complete reports of "Magicut" laboratory findings. Send for this authoritative guide to lower filing costs.

Industrial Distributors provide the finest goods and services in the least possible time. Our files are sold exclusively through them.

"Magicut's" perfectly formed gullets eliminate "pinning" and consequent scratching. Note steep-angled serrations which produce maximum cutting surfaces. ▶



NICHOLSON U.S.A.

NICHOLSON FILE COMPANY, PROVIDENCE 1, RHODE ISLAND

(In Canada: Nicholson File Company of Canada Ltd., Port Hope, Ontario)

BLACK DIAMOND U.S.A.

NICHOLSON and BLACK DIAMOND FILES

A FILE FOR EVERY PURPOSE

was sales manager of a similar division at Fanner Mfg. Co.

Raybestos-Manhattan Inc., Passaic, N. J., appointed **L. S. Hilton** sales manager, abrasive and diamond wheel departments. Formerly assistant sales manager, he succeeds **W. H. Steinberg,** now technical consultant.

Daniel W. Ruple was made assistant to the president of **Titeflex Inc.**, Springfield, Mass. His primary responsibilities will be in the manufacturing divisions of the company, a subsidiary of Atlas Corp.

J. E. Hughes, vice president, Henry J. Kaiser Co., was appointed assistant general manager, **Kaiser Engineers Div.**, Oakland, Calif.

Edward G. Sautter succeeds **Willard H. Holt,** retired, as treasurer of **Michigan Tool Co.**, Detroit.

Stanford B. Spracklen was named associate director of research and engineering, process instruments division, **Beckman Instruments Inc.**, Fullerton, Calif.

Harry R. Bartell was made assistant vice president-sales, **Thrall Car Mfg. Co.**, Chicago Heights, Ill. He will head the new Thrall office in St. Louis.

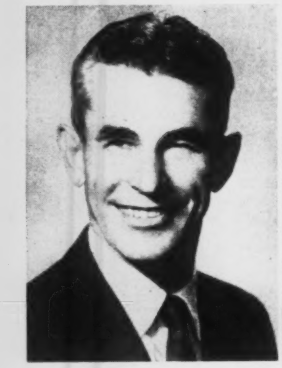
Harlan Twible was appointed vice president and manager of marketing, **Hays Corp.**, Michigan City, Ind. He previously was sales manager of Minneapolis - Honeywell Regulator Co.'s Milwaukee office.

William T. Griffiths was elected president, **Anders-Lykens Corp.**, subsidiary of Milton Roy Co., Philadelphia. Other newly elected officers are: **Edwin W. Anders,** vice president; **John J. Smith,** secretary-treasurer.

Mark B. Patten, assistant purchasing agent, was promoted to purchasing agent of **Behr-Manning Co.**, Watervliet, N. Y.

H. W. Cook Jr. was made Houston district sales manager, **Page Steel & Wire Div.**, American Chain & Cable Co. Inc.

Paper Machinery Corp., Milwaukee, elected **Ralph O. Martin** president; **Donald W. Baumgartner,** vice president.



WINFIELD HEINZ
Ampex mgr.-engineering

THOMAS F. MacLAREN
Brown & Sharpe sales post

HORACE KEECH
Conoflow plant mgr.

Winfield Heinz fills the new post of manager of engineering, instrumentation division, **Ampex Corp.**, Redwood City, Calif. He was coordinator of the division.

Thomas F. MacLaren was appointed general sales manager, machine tool division, **Brown & Sharpe Mfg. Co.**, Providence, R. I. For the last two years, Mr. MacLaren was director of field sales for the division.

A. W. Beck fills the new post of vice president-marketing for **Robertshaw-Fulton Controls Co.**, Richmond, Va. He was sales manager, Grayson Controls Div.

William C. Clark was named assistant to vice president-sales, **Pennsylvania Flexible Metallic Tubing Co.**, Philadelphia.

Ralph W. Cutler was made manager of estimating and engineering at **Kaiser Steel Corp.'s** fabricating division, Montebello, Calif.

Irwin Zelman was appointed metal-to-metal bonding specialist at **Hastings Plastics Inc.**, Santa Monica, Calif.

Edward H. Winkleman was named eastern regional sales manager, industrial chemicals division, **Pittsburgh Coke & Chemical Co.** He is at New York.

Charles L. Frederick was appointed director of engineering for **North American Refractories Co.**, Cleveland.

Ralph J. McIntyre was named engineering director, **Rey-Gould Mfg. Co.**, Santa Ana, Calif.

Horace Keech was named plant manager for **Conoflow Corp.**, Philadelphia. He succeeds **Ralph G. Holben,** who was made vice president in charge of methods engineering.

R. E. Gould was promoted to chief engineer, **Frigidaire Div.**, Dayton, Ohio, General Motors Corp. He was assistant chief engineer in charge of research and future products.

William F. Schlick was appointed general sales manager, **Sterling Grinding Wheel Co.**, Tiffin, Ohio. He was western regional sales manager.

Daniel H. Winter was made purchasing agent, **Wells Badger Corp.**, Milwaukee, to succeed **Robert Weber,** retired.

William L. Wright Jr. was appointed assistant general sales manager, **Roberts-Gordon Appliance Corp.**, Buffalo.

Risdon Mfg. Co., Naugatuck, Conn., appointed **Richard P. Pearson** assistant sales manager of wire specialties for its wire goods division.

Aetna Steel Products Corp., New York, appointed **Edward H. Mark** works manager of its Arnot-Jamestown Div.

James G. Hanna was made Chicago district sales manager, mobile hydraulics division, **Vickers Inc.**, a division of Sperry Rand Corp.

In **Aluminum Co. of America's** engineering department, Pittsburgh, **B. J. Fletcher** was named general manager of engineering; **L. B.**

This sort of "school room" keeps Wean Engineers at the top of their class. It's typical of...

WEAN CREATIVE ENGINEERING

The "students" are Wean Engineers—

The instructor, D. W. Plumer—a General Electric Company Application Engineer. The occasion: G-E's Application Engineering Course being presented outside the G-E organization for the first time.

Wean feels honored to participate in this important industrial "first". It is in line with an established policy of research and development which gives added meaning to the phrase . . . "Wean Creative Engineering"

WEAN

THE WEAN ENGINEERING COMPANY, INC., WARREN, OHIO

ARTHUR W. CAIN
Volco Brass president

EUGENE V. CYRAN
Modern Eng. Service pres.

KARL G. JANSSON
Keokuk Steel Casting exec.

RAYMOND F. PARKER
GE cutting tool sales mgr.

Kuhns, chief engineer; **H. F. Robey Jr.,** chief construction engineer.

Arthur W. Cain was elected president, **Volco Brass & Copper Co.,** Kenilworth, N. J. He was vice president-sales. **Dr. Curt Rolland** was promoted to president of the subsidiary, **New Jersey Rolling Mills. Norman Coates,** owner, remains as chief executive officer as well as chairman of both firms.

Eugene V. Cyran, executive vice president, was elected president, **Modern Engineering Service Co.,** Berkley, Mich., to succeed **Walter R. Jackson,** now chairman. **A. J. Moeser,** formerly with American Brake Shoe Co., was elected vice president - treasurer. **R. F. Townsend** was made general sales manager.

L. A. Conrad, for the last five years general supervisor of raw materials (Chicago), **United States Steel Corp.,** was named assistant manager to succeed **C. R. Shaffner,** retired.

William W. Gilbert was made Detroit district sales manager, boiler division, **Babcock & Wilcox Co.** He succeeds **Arthur R. Waugaman,** retired.

A. F. Smith fills the new post of director of merchandising for **A. O. Smith Corp.,** Milwaukee. He was market research director.

Marion W. Klippel was appointed eastern regional sales manager, **National Automatic Tool Co. Inc.,** Richmond, Ind. He succeeds **John R. Keates,** now general sales manager. Mr. Klippel is at Mt. Vernon, N. Y.

Karl G. Jansson was appointed vice president and director of sales for **Keokuk Steel Casting Co.,** Keokuk, Iowa, and **Mid-Continent Steel Casting Corp.,** Shreveport, La. He was formerly vice president-general sales manager. **Forst L. Robertson** was made sales manager of Keokuk Steel Casting.

Harold C. Wilson was made sales manager, aluminum products, **Revere Copper & Brass Inc.,** New York. Former manager of the company's aluminum sales relations, he succeeds **Stanley H. Wilson,** now assistant to the vice president-general sales manager.

Frank O. Kovish was elected a vice president of **Hein - Werner Corp.,** Waukesha, Wis.

Bernard F. Gofberg was appointed vice president, **Deluxe Metal Furniture Co.,** Warren, Pa., division of Royal Metal Mfg. Co. He has been general manager of Deluxe since 1955.

Universal - Cyclops Steel Corp., Bridgeville, Pa., appointed **Clement A. Mathews** superintendent of the cold strip department of its Coshocton, Ohio, plant, now under construction. He was superintendent, wide band department, Bridgeville.

Paul L. Richardson was appointed mill representative of **Eastern Stainless Steel Corp.,** Baltimore. He was superintendent of the polishing department.

Charles A. Wolf was named director of marketing, autonetics division, **North American Aviation Inc.,** Downey, Calif.

Raymond F. Parker was appointed manager of cutting tool sales, metallurgical products department, **General Electric Co.,** at Detroit. He was manager of mining sales.

William A. Richardson was made assistant district sales manager at Detroit for **Republic Steel Corp.** He supplements the activities of **J. M. Kimbrough,** who also serves in Detroit as assistant district sales manager.

Charles I. Vogel joined **Olin Aluminum Div.,** Olin Mathieson Chemical Co., as regional sales manager, Philadelphia. He resigned as vice president-sales, Brooks & Perkins Inc.

David S. Meiklejohn, treasurer, **American Machine & Foundry Co.,** New York, was elected a vice president.

At **Crucible Steel Co. of America's** Cleveland sales branch, **Walter J. Bernardy** was made assistant branch manager-staff; **Douglas W. Sturges,** assistant branch manager-field.

George W. Streepey was named assistant general manager of **Aluminum Co. of America's** mining division, Pittsburgh. Formerly mining division production manager, he is succeeded by **Robert S. Overbeck.**

S. A. Bruno was made New Orleans district manager, **Air Reduction Sales Co.,** replacing **L. F. Bruno,** retired.

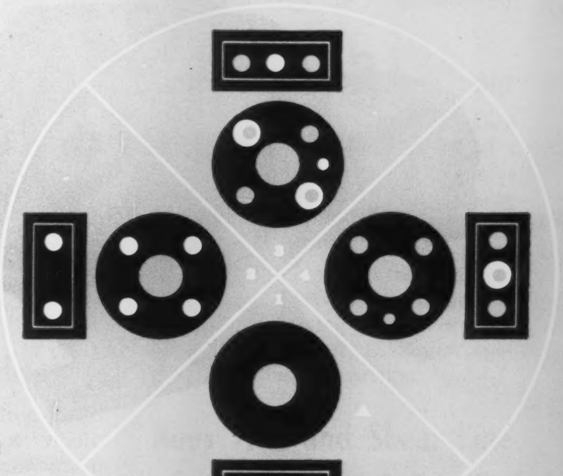
W. Edward Gorham was appointed manager, architectural development, **Atlas Steels Ltd.,** with headquarters in Toronto, Ont.

Natco Naturals

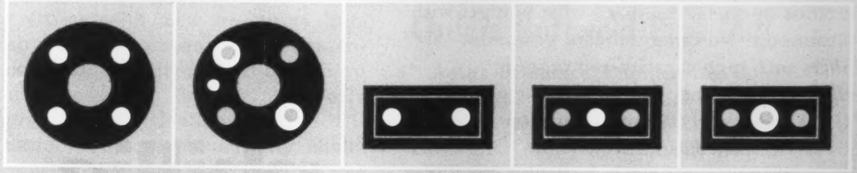
Cost-Cutting Ways
You Can Use
Standard Multi-Spindle Natcos

Any time your parts require machining *more than one hole*–drill, bore, face or tap–it may well be a "Natco Natural." Your standard Natco will produce substantial savings in a surprising number of situations, *even in small job-shop lots!* Call in your nearby Natco field engineer; he'll tell you in short order whether you've got a "Natco Natural" there.

Multiple Drilling Operations on Two Part-faces

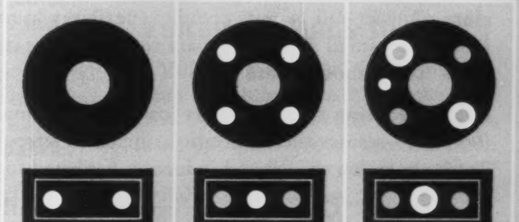


130 parts per hour—4-position rotary table. Position #1: *Unload finished part, transfer half-finished part, load new part.* Position #2: *Drill 4 holes, Face A. Drill and countersink 2 holes, Face B.* Position #3: *Drill 1 hole, ream 2 holes, Face A. Drill 1 hole, Face B.* Position #4: *Trepan 1 hole, Face B.*

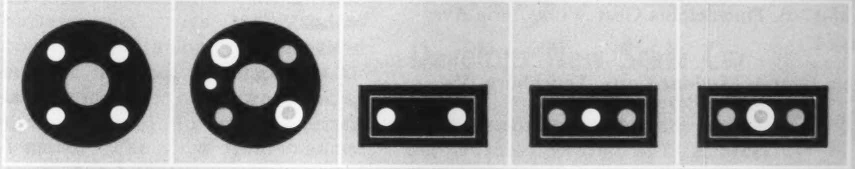


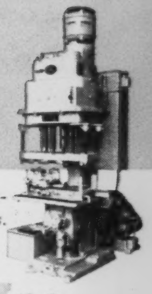
65 parts per hour—stationary fixture *with 5 work locations. Operator transfers parts after each stroke. One part completed per stroke.*

40 parts per hour—straight-line indexing. *After every 3 strokes, operator unloads finished part, transfers half-finished part and loads fresh part.*



23 parts per hour—tumble-type fixture. *Operator transfers and tumbles fixture from one position to the next. One part completed every five strokes.*





Standard multi-spindle Natcos range from 1 hp, 10-spindle machines to 50 hp machines with up to 72 spindles. Spindles in standard Natcos are driven through universal joints and located by either adjustable arms of bored slip plates.

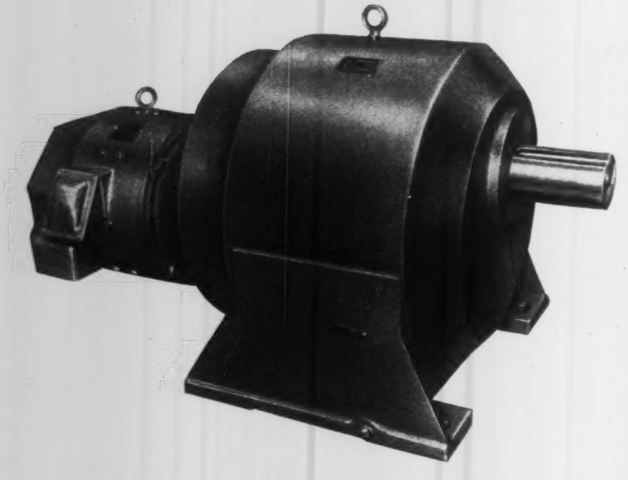
NATCO

National Automatic Tool Company, Inc.

Richmond, Indiana

Multi-spindle drilling, boring, facing & tapping machines. Special machines for automatic production.

Call Natco Offices in Chicago, Detroit, New York, Buffalo, Boston, Philadelphia, Cleveland, Los Angeles; distributors in other cities.



NOW . . . GREATER CAPACITY than any other standard gearmotor . . . and in smaller space!

Capacity up to 200 hp loads, with ratios up to 440:1—that's what you get with the new Philadelphia Type "G" Gearmotor. No other standard gearmotor or in-line reducer on the market offers such high capacity and rugged construction. Yet its compact design gives you the smallest possible power package for any job. The Type "G" is the answer for any application demanding heavy duty, continuous service performance.

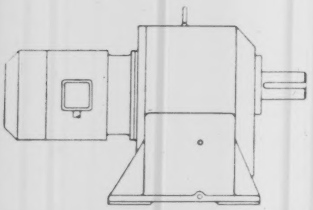
Compact Design. "Shaft-in-line" design makes the new Type "G" Gearmotor more compact and permits complete flexibility in mounting. *Result:* substantial savings in space required. You can even mount the Type "G" without a base plate.

Helical Gearing supports larger loads with maximum power efficiency (96-98%)—assures silent operation, increased strength, longer life. Teeth are crown shaved and induction hardened for optimum performance.

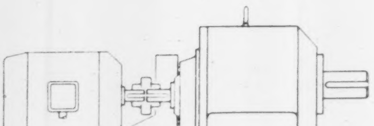
The Type "G" Gearmotor is an extension of the famous Philadelphia Gearmotor Line. It is available as a reducer, gearmotor with motor mounting bracket, or standard gearmotor with flange mounted motor. For complete information, write for Bulletin GM-57-B, Philadelphia Gear Works, Erie Ave. and G Street, Philadelphia 34, Pa.

Offices in Principal Cities • Virginia Gear & Machine Corp., Lynchburg, Va.

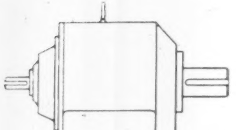
phillie gear®



INTEGRAL GEARMOTOR (Flange Motor)



UTILITY GEARMOTOR (Foot Mounted Motor)



IN-LINE REDUCER

Mallory-Sharon Metals Corp. Organized

Successor to Mallory-Sharon Titanium Corp. is one of the largest producers of special metals, such as titanium, zirconium, and hafnium, with assets exceeding $55 million

BROADENING of products to include zirconium, hafnium, and other new metals is reflected in the name of the newly formed Mallory-Sharon Metals Corp., formerly Mallory-Sharon Titanium Corp.

Mallory-Sharon Metals is owned equally by P. R. Mallory & Co. Inc., Sharon Steel Corp., and National Distillers & Chemical Corp. Facilities include: A titanium melting plant, rolling mill, research and quality control laboratories, and other buildings at Niles, Ohio; and titanium and zirconium sponge production plants and laboratories (previously owned by National Distillers) at Ashtabula, Ohio. Reactive Metals Inc., Ashtabula (previously jointly owned by Mallory-Sharon and National Distillers) becomes a wholly owned subsidiary of Mallory-Sharon Metals.

Officers—A new executive lineup for the company has been announced. Chairman of the board is James A. Roemer, formerly president of Mallory-Sharon Titanium Corp. and currently chairman of Sharon Steel Corp. The new president and chief executive officer is F. H. Vandenburgh, formerly vice president and general manager of Mallory-Sharon Titanium Corp. Other officers are James E. Brady, secretary-treasurer, and M. K. Huber, assistant secretary.

"Sales for 1958 should be ahead of 1957, with broadening of our product line to include . . . new metals required for the missile and nuclear age," says Mr. Vandenburgh. "In titanium, the long-term outlook is good, although the titanium industry has more capacity than required to meet current demand. The shift from manned aircraft to rockets and missiles has coincided with our introduction of new titanium alloys for high temperature applications. In addition, new commercial applications are being steadily developed."

National Distillers was awarded a contract by the Atomic Energy Commission in 1956 to supply 1 million lb of zirconium sponge annually for a period of five years. This contract will be carried out by Mallory-Sharon Metals Corp. The company also now has facilities to produce an additional 1 million lb of zirconium sponge. A substantial part of this will be converted into mill products for fabricators of nuclear power and chemical processing equipment. Hafnium metal will be produced as a byproduct.

Renames Alcoa Subsidiary

Aluminum Cooking Utensil Co. Inc., Kensington, Pa., a wholly owned subsidiary of Aluminum Co. of America, Pittsburgh, will change its name to Wear-Ever Aluminum Inc., effective Apr. 1.

Orders Buttweld Pipe Mill

Aetna-Standard Engineering Co., Pittsburgh, will build a continuous buttweld pipe mill for Pittsburgh Tube Co., Monaca, Pa. The mill will turn out cold drawn mechanical tubing for use by the automotive industry. Material from the mill will be further processed by drawbench operations to special OD, wall, length, and material hardness specifications. In some instances, tubing will be fabricated by forging or swaging. Annual capacity of the mill will be 50,000 net tons for a variety of sizes ranging from 0.835 in. OD by 0.091 in. to 3.500 in. OD by 0.450 in.

Develops New Scale Car

Three self-propelled automatic weight recording scale cars are being put into operation at U. S. Steel Corp.'s Youngstown plant to carry ore and other burden materials from storage bins to blast furnaces. The cars mark U. S. Steel's latest entry in the industrial car field. They are made at its Johnstown (Pa.) Works of all-welded Cor-Ten steel plates. The hoppers are lined with USS-T-1 steel for resistance to abrasion and impact. They are equipped with electronic scales, activated by hydraulic type load cells. Each car is equipped with two 75-hp motors and with an electronic interlocking system so that loads may be discharged only at the skip hoist and only when the skip car is in receiving position.

Steel Shoring Sales Jump

Brainard Steel Div., Sharon Steel Corp., Sharon, Pa., created a special department to handle sales of tubular steel shoring. Heading the department as assistant sales manager is Vaughn Monsell. Sales of this product to the building industry have grown too large for continued handling by the regular sales force, says R. U. Sager, specialty products manager.

Buys Trim and Shear Line

Youngstown Sheet & Tube Co., Youngstown, has ordered from Aetna-Standard Engineering Co., Pittsburgh, a 60-in. trim and shear line for its Campbell (Ohio) Works. The equipment will process strip steel at speeds up to 1200 fpm; will handle coils up to 62,000 lb, pack weights of 40,000 lb, widths from 24 in. to 62 in., and lengths from 36 in. to 200 in.

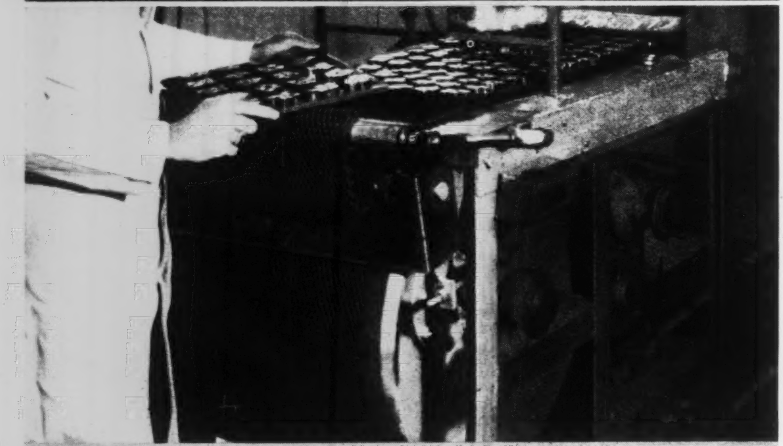
Vulcan Expands in South

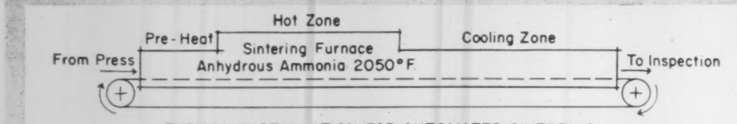
Vulcan Materials Co., Birmingham, established a Concrete Pipe Div. It will operate four plants lease-optioned from the Sherman Concrete Pipe Co. The plants at Tallahassee, Tampa, and Sanford, Fla., and Decatur, Ga., have a combined annual capacity of about 50,000 tons of concrete pipe. The division will also operate plants of Southern Cen-Vi-Ro Pipe Corp. in Mobile and Anniston, Ala.; Atlanta Concrete Pipe Co., Atlanta; and Jacksonville Concrete Pipe Co., Jacksonville, Fla.

Establishes Research Unit

Hill Acme Co., Cleveland, erected a research building for processing representative quantities of customers' materials to establish and prove technique, quality, and production available on Hill Acme

Cambridge WOVEN WIRE BELTS





TYPICAL INSTALLATION FOR AUTOMATED SINTERING

METAL-MESH BELTS CUT OPERATING COSTS IN CONTINUOUS HEAT TREATING

Moving through a fiery 2050° F. temperature to fuse metal powders, Cambridge Woven Wire Belts easily resist heat and flame to give long service life, less maintenance, continuous, uniform production. Belt-to-belt flow of products through various heat treating operations eliminates costly manual handling, batch processing for faster, more economical production.

In annealing, quenching and washing operations, Cambridge belts help increase product uniformity and maintain capacity production. Here's why:

OPEN MESH ALLOWS FREE CIRCULATION OF HOT GASES, LIQUIDS through belt and around product for faster, more uniform processing; quench and wash solutions drain freely, thoroughly.

ALL-METAL CONSTRUCTION IS HEATPROOF, ACIDPROOF—takes up to 2100° F. temperatures; resists corrosive attack; has no seams, lacers or fasteners to break.

SPECIAL SURFACE ATTACHMENTS AVAILABLE—raised edges or cross flights to hold product on belt during movement.

Talk to your Cambridge FIELD ENGINEER soon—he'll explain the many advantages of continuous heat treating on Cambridge belts. And, he'll recommend the belt size, mesh or weave—in the metal or alloy—best suited to your operations. You'll find his name in the classified phone book under the heading "BELTING, MECHANICAL". Or, write for FREE 130-PAGE REFERENCE MANUAL giving mesh specifications, design information and metallurgical data.

The Cambridge Wire Cloth Co.

WIRE CLOTH | METAL CONVEYOR BELTS | SPECIAL METAL FABRICATIONS

Department J,
Cambridge 2,
Maryland

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

Cambridge
CONVEYOR
BELTS

machine tools. The company makes hydraulic surface grinders; abrasive belt grinders and polishers; billet and scrap shears; forging, threading and tapping machines; metal cutting knives; and machinery castings.

Buys Manufacturing Rights

Lyncoach & Truck Co. Inc., Oneonta, N. Y., purchased manufacturing and sales rights for aluminum truck body kits from Reynolds Metals Co., Louisville. Inventories, tooling, and assembly fixtures are included in the purchase.

Sells Marine Engine Line

Twin Coach Co., Kent, Ohio, sold its marine engine business to W. B. Crofton, owner of Crofton Diesel Engine Co., San Diego, Calif.

Brooks Oil Moves Offices

Brooks Oil Co. moved its sales and engineering offices from Pittsburgh to its executive offices and plant at 3304 E. 87th St., Cleveland 27, Ohio. The Pittsburgh facility at 928 Ridge Ave. will continue as a district sales office.

Forms Tool and Die Firm

Frank E. Grant and Louis Berta have formed the Hi-Speed Tool & Die Service in Buffalo. The firm will specialize in tool and die manufacturing, metal stampings, and fabrication.

Erects Branch Warehouse

Clay Equipment Corp., Cedar Falls, Iowa, erected a 10,000 sq ft branch warehouse at Ft. Wayne, Ind. The pre-engineered trussless steel building was manufactured by the Wonder Building Corp. of America, Chicago. Clay produces farm building equipment.

Changes Status of Graver

Graver Water Conditioning Co., New York, has become a completely integrated and wholly owned subsidary of Union Tank Car Co., Chicago. Graver Water was a division of Graver Tank & Mfg. Co. Inc., East Chicago, Ind.,

people
buy
Scott Wipers
for
many
reasons:

Scott Wipers are used at RCA-Camden for wiping hands that handle speaker voice coils, wiping powder and dust at coil packing stations, wiping soldering irons on assembly lines, cleaning punch presses. Mr. George M. Cavanaugh, Administrator, Staff Purchasing, is shown here beside an RCA Victor Mark II Hi-Fi "Victrola" which uses four speakers in RCA's Panoramic Sound System.

SCOTT WIPERS

SCOTT WIPERS

RCA keeps plant cleaner, gets greater wiping efficiency with Scott Wipers!

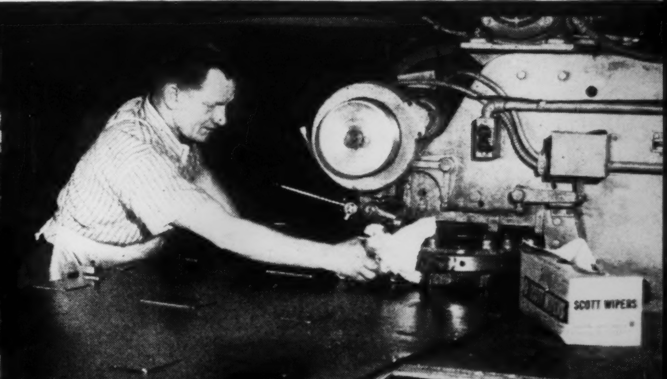
Employees at RCA, Camden, N. J. who produce high quality speakers for RCA Victor Hi-Fi sets, say that Scott Wipers are "easier to use than rags." Lintfree and disposable, Scott Wipers are ideal for wiping excess thermosetting cement off parts (cloth could wipe cement but couldn't be satisfactorily laundered afterwards) . . . for eliminating "fuzz on fingers" after handling cemented parts . . . and for all general wiping jobs from the Speaker Assembly Department to the Tool Shop. Scott Wipers contribute greatly to good housekeeping and help in RCA's constant efforts to produce quality products through expert workmanship, precise engineering and manufacturing methods.

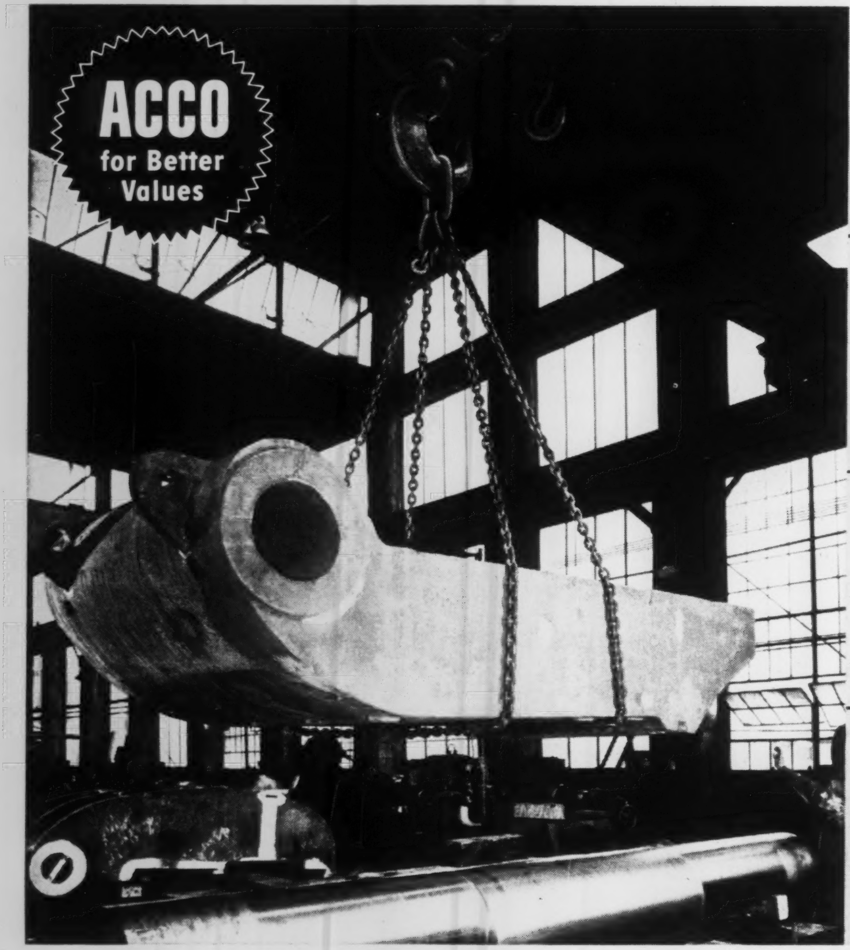
SCOTT PAPER

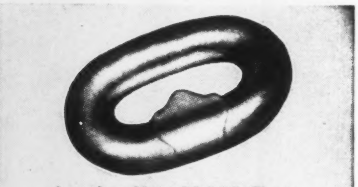
Maker of the famous Scott paper products you use in your home. See "Father Knows Best" and "The Gisele MacKenzie Show" on NBC-TV.

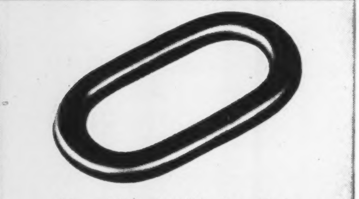
For complete facts and figures on many other users of Scott Wipers, get case histories from your Scott distributor (Yellow Pages: "Paper Towels") or write: Scott Paper Company, Dept. S-82, Chester, Pa.

SCOTT WIPERS

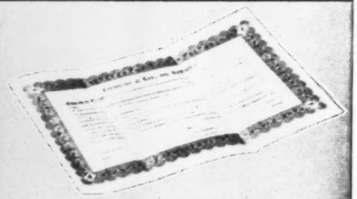





Accoloy X-weld 125 Chain
Pat. No. 2763768


New Shaped Master Link

ACCO REGISTERED SLING CHAIN 125
ACCO Registration Ring


Registration Certificate

Big, costly loads are safe with Acco Registered® Sling Chains

• Pictured above is a huge, 35,000-pound casting being lifted *easily and safely* by a 4-leg ACCO *Registered* Sling Chain. Directly beneath the load is a highly polished and machined crank shaft worth many thousands of dollars.

Imagine the cost in lost labor and materials, should the sling chain fail! But it won't fail—for this ACCO *Registered* Sling Chain and all its components have the inbuilt strength needed to handle the job with complete safety!

When you buy an ACCO *Registered* Sling Chain, you get these four exclusive "plus values" which *add materially to the worth, but not to the cost,* of the sling:

1 • **Accoloy X-weld 125 Chain**, for extra strength. This chain hangs straight . . . does not kink . . . has extra resistance to bending.

2 • **New Shaped Master Link**, uniquely shaped to withstand deformation under loads up to 18% greater than a round-section link can do.

3 • **ACCO Registration Ring**, serially numbered as evidence that the assembled sling has been factory proof-tested to twice its working load limit.

4 • **Registration Certificate**, signed by us, attesting to the field-tested design and proof-testing of the complete sling.

Remember, the best sling is one of your most economical material-handling tools. You'll find it good business to consult your ACCO *Registered* Sling Chain Distributor on all your sling needs; his counsel is available without obligation. If you don't know his name, write us at York, Pa.

WHAT "ACCO REGISTERED" MEANS

1. The best material
2. Unit safety factor (on bodies, rings, links, hooks)
3. Proof test of complete sling to twice the working load limit
4. Actual field service test of each design
5. Metal identification ring on each sling
6. Signed Registry Certificate with each sling

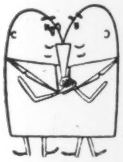
American Chain Division
AMERICAN CHAIN & CABLE
Bridgeport, Conn. • Factories: *York and *Braddock, Pa.

Sales Offices: *Atlanta, Boston, *Chicago, *Denver, Detroit, *Houston, *Los Angeles, *New York, Philadelphia, Pittsburgh, *Portland, Ore., *San Francisco

**Indicates Warehouse Stocks*

ACCO
TRADE MARK

whose assets were recently acquired by Union Tank Car Co.



CONSOLIDATIONS

Bohn Aluminum & Brass Corp., Detroit, purchased **Plastray Corp.,** Walled Lake, Mich., producer of plastic housewares. Plastray also does custom molding for the refrigeration and automotive industries.

Park Tool Co., tool and die manufacturer, has been purchased by **Minnesota Rubber Co.** Both are in Minneapolis. Park Tool's facilities will be used to expand capacity of Minnesota Rubber's Tool & Die Div. William Ecoff will be manager of the expanded division and will be in charge of research and development work in applications of metals in rubber compounds.

Treyco Products, Buffalo, has been acquired and joins the Niagara Cutter and Erie Tool divisions as a third unit of **Bollier-Damerell Inc.,** North Tonawanda, N. Y. Treyco makes self-contained power-driven sharpening equipment for cutlery, saws, and tools. Albert F. Lotz is general manager of the new division.

Federal Machinery Sales Co. has merged with **Bryant Machinery & Engineering Co.** to form **Federal-Bryant Machinery Co.,** 4639 W. Washington Blvd., Chicago 44, Ill. S. B. Booz is president of the machine tool distributor organization. C. B. Tansley is vice president and sales manager of the Machine Tool Dept.; and H. A. Paine, vice president and sales manager of the Small Tool Dept.

Consolidated Electrodynamics Corp., Pasadena, Calif., will merge with **Cenco Instruments Corp.,** Chicago, subject to approval of stockholders and government agencies. Cenco makes scientific instruments, laboratory apparatus, and industrial equipment. Consolidated makes dynamic-measuring and recording equipment; automatic electronic data-processing systems; analytical and industrial control instrumentation and equipment; precision optics; test

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H & K facilities enable the perforating of all metals, wood, plastics and cloth fabrics. Perforated materials can be furnished in sheets, coils, rolls or plates. Fabricating services include shearing, rolling, welding and forming.

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☐ Send sample pellets for ______°F temperature
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instruments; and high-vacuum equipment and systems.

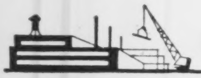
NEW ADDRESSES

Century Electric Co., St. Louis, moved its district office to 16115 Puritas Ave., Cleveland 35, Ohio. F. R. Hatfield is district manager.

Watson Elevator Co. moved to 342 W. 40th St., New York 18, N. Y.

Trinity Tools Inc. moved to 261 River Rd., North Tonawanda, N. Y.

Parts Div., Dana Corp., moved to a new office and warehouse building at 253 Wagonner Blvd., Toledo, Ohio.



NEW PLANTS

DuBois Co. Inc., Cincinnati, is building a 53,022 sq ft plant at East Rutherford, N. J., to make an estimated 1 million lb or more annually of cleaning compounds for institutions and industry.

Link-Belt Co., Chicago, opened its plant at 1200 Sycamore St., Montebello, Calif., about 10 miles southeast of Los Angeles Civic Center. It more than doubles capacity of the previous Los Angeles plant for production of material handling equipment.

NEW OFFICES

Allis-Chalmers Mfg. Co., Milwaukee, established a sales office at 412 First National Bank Bldg., Abilene, Tex. J. C. Barnett is resident representative.

Black & Decker Mfg. Co., Towson, Md., opened a sales and service branch office at 3407 S. Dale Mabry Highway, Tampa, Fla. E. G. Seiders is service manager at the branch under the supervision of E. G. Shue, southeastern regional service manager.

Titanium Metals Corp. of America, New York, opened a district

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LARGE OR SMALL HEAT TREATED OR PLAIN

SIMONDS has over 60 years' experience in cutting quality industrial gears. We can supply any type of gear in cast or forged steel, gray iron, bronze, Meehanite, rawhide or bakelite in a full range of sizes adaptable to the material. Also heat-treated, case or flame hardened gears of carbon or alloy steel. Send us your requirements for quotation.

Custom **GEAR CUTTING**

SIMONDS' facilities can produce any type of custom gear from your blanks if you prefer. Same quality . . . same prompt service.

QUALITY GEARS FOR OVER 65 YEARS

SPUR GEARS
BEVEL GEARS
MITRE GEARS
WORMS WORM GEARS
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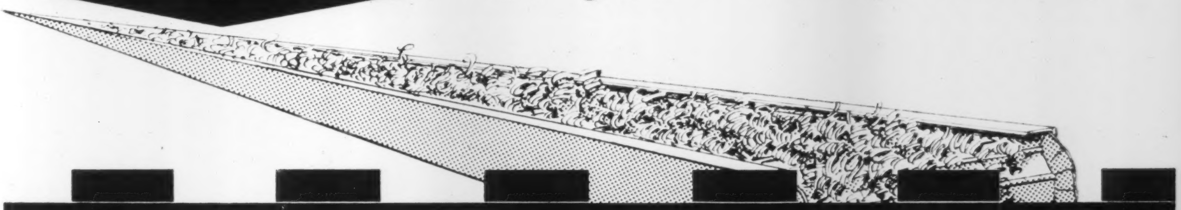
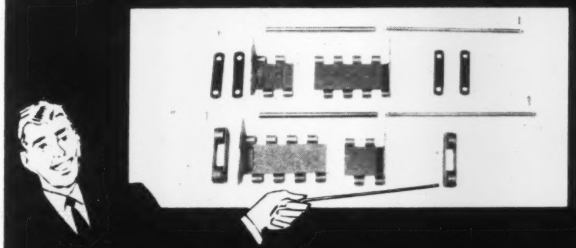
Also stock carrying distributors of Ramsey Silent Chain Drives and Couplings; and industrial V-belts.

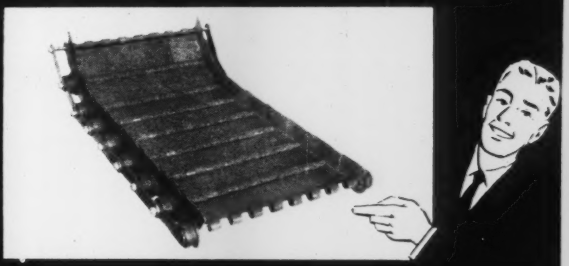
SIMONDS GEARS

THE SIMONDS GEAR & MFG. CO.
LIBERTY at 25TH PITTSBURGH 22, PA.

HERE'S A STEEL HIGHWAY for your scrap traffic!



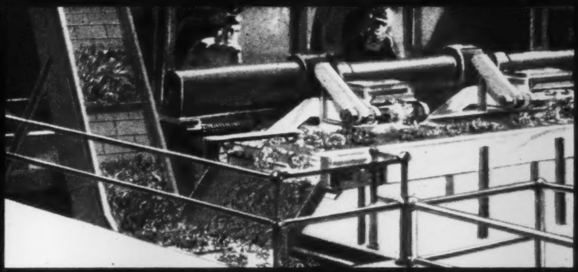




May-Fran Hinged-Steel Belting is assembled from mass-produced components to form a materials handling belting of almost any width, length or contour to meet individual specifications. Links are joined by means of steel rods . . . links, wings and side chain become integral unit.

CHECK THESE FEATURES

- ✓ Handles heavy, hot and rough materials
- ✓ Engineered for the ultimate in working life
- ✓ Constructed for maintenance-free operation



MAY-FRAN
HINGED-STEEL BELTING

Complete details including specifications and engineering drawings are available in Catalog MF-600. Send today!

Belting can be assembled in a wide range of lengths, widths and contours . . . to facilitate the handling of metal scrap, hot forgings, stampings, flash, wet or dry chips as well as other sharp or rough materials.

May-Fran hinged-steel belting gives production savings through scrap handling efficiency

Precision formed steel links are assembled in horizontal rows and joined by high-carbon steel tubes and connecting rods. These rods are fastened to side chains to support the belt links so they "float" freely, and side chain takes all tension. Wings remain positively engaged and in continuous overlap at all times, even over sprockets.

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When you purchase FASTENERS, your first considerations should be given to quality, delivery and prices.

Chandler, as a leading manufacturer of cold forged cap screws, takes the same considerations. Mass production is only part of their story . . . but absolute control during every phase of production means top quality and uniformity.

Realistic pricing is important . . . and is followed.

If your requirements include automotive, Place self-locking, connecting rod or aircraft engine bolts in high carbon alloy and stainless steels, check with Chandler today. They are prepared to produce special heads, drilled heads and shanks, and ground bolts to tolerances as close as 0.0005-inch.

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Specialists in Thread-Rolling
after Heat Treating.

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sales office in the Exchange Bank Bldg., Dallas, Tex., under the supervision of Robert L. Kane.

ASSOCIATIONS

American Foundrymen's Society, Des Plaines, Ill., has nominated the following for the 1958-59 fiscal year: President, Lewis H. Durdin, Dixie Bronze Co., Birmingham; vice president, C. E. Nelson, Magnesium Div., Dow Chemical Co., Midland, Mich. The society also announced formation of two new divisions: Ductile Iron Div., C. W. Gilchrist of Cooper-Bessemer Corp., Mt. Vernon, Ohio, chairman; and Die Casting & Permanent Mold Div., D. L. Colwell of Apex Smelting Co., Cleveland, chairman.

H. Merrill Bowman, American Pulley Co., Philadelphia, has been elected president of the **Multiple V-Belt Drive & Mechanical Power Transmission Association,** Chicago. Dwight H. Lory, Texrope Dept., Allis-Chalmers Mfg. Co., Cincinnati, was elected vice president.

Dr. D. J. McPherson has been appointed manager of the Metals Research Dept., **Armour Research Foundation of Illinois Institute of Technology,** Chicago. He replaces Robert A. Lubker who has been named director of research at Alan Wood Steel Co., Conshohocken, Pa.

American Standards Association, New York, re-elected H. Thomas Hallowell Jr., Standard Pressed Steel Co., Jenkintown, Pa., president for a third consecutive term. John R. Townsend, Office of Assistant Secretary of Defense (research and engineering), was elected vice president, succeeding Van H. Leichliter, American Steel & Wire Div., U. S. Steel Corp., Cleveland.

Hardware Merchants' & Manufacturers' Association of Philadelphia installed these officers: President, D. Rumsey Plumb, Fayette R. Plumb Inc.; vice president, J. R. Griffith, Shields & Bro.; and secretary-treasurer, T. A. Fernley Jr., all of Philadelphia.

BIRDSBORO ROLLS...

. . . are a sum total of manual skill, metallurgical technique and technical manufacturing controls. The complete line includes many major roll types, subdivided into distinct analyses to meet a variety of job requirements. *Main Office, Engineering Department and Plant:* Birdsboro, Pa., *District Office:* Pittsburgh, Pa.

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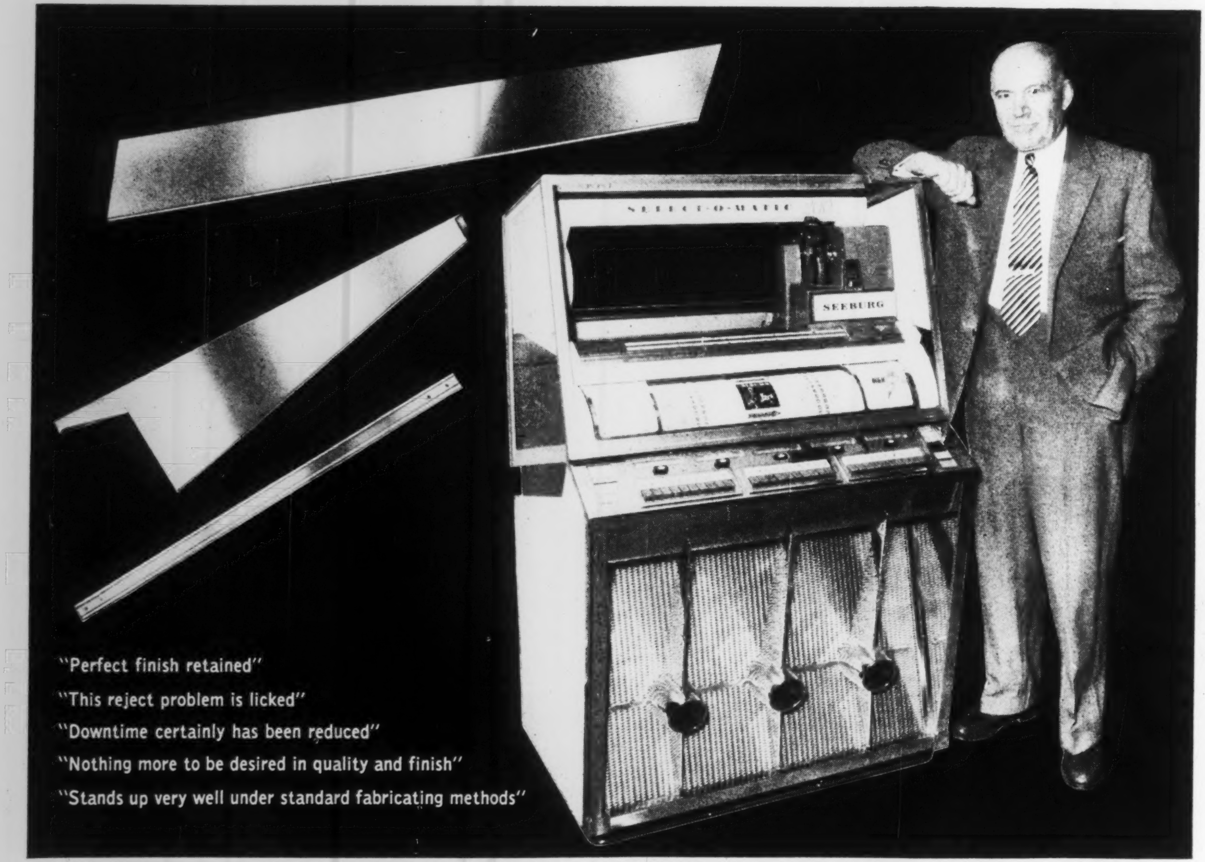
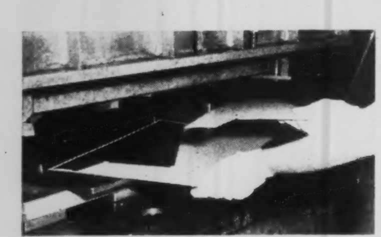
STEEL MILL MACHINERY • HYDRAULIC PRESSES • CRUSHING MACHINERY • SPECIAL MACHINERY • STEEL CASTINGS • Weldments "CAST-WELD" Design • ROLLS: Steel, Alloy Iron, Alloy Steel

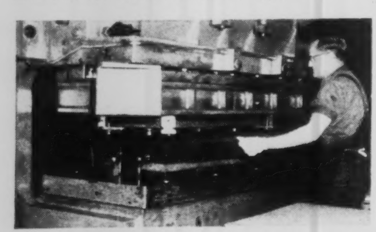

"Perfect finish retained"
"This reject problem is licked"
"Downtime certainly has been reduced"
"Nothing more to be desired in quality and finish"
"Stands up very well under standard fabricating methods"
SELECT-O-MATIC
SEEBURG

K. R. Craft, Vice President, The Seeburg Corp., Chicago, with one of the company's famous juke boxes. The brilliant reflectivity and durability of Nickeloid pre-plated metals is an important factor in the product's eye-catching good looks.

NICKELOID METALS SAVE 4 PRODUCTION STEPS—REDUCE REJECTS FOR THE SEEBURG CORPORATION



Standard fabricating methods are used to stamp and form juke box trim. Nickeloid Metals eliminate machinery tie-up; rejects are less than 1%.



Stamping Nickeloid chrome steel, protected with Mar-Not adhesive-backed paper which is easily peeled off. Finished part will need no polishing.

Pre-Finished Design Material is Easily Worked With Standard Fabricating Methods

The Seeburg Corporation uses Nickeloid *pre-plated* chrome steel to achieve functional beauty and attention-value . . . economically. Before switching to Nickeloid, the company did its own cleaning, plating and buffing. The job required four — sometimes five more operations than are now necessary. According to Mr. Craft, "The tremendous cost of plating and buffing was not only more expensive and much more time consuming, but the finished product had to be inspected, and the rejections on plated and buffed metals was very much higher than it is with Nickeloid. Economically, the Nickeloid Metals have proved themselves in production."

Using standard fabricating methods, Nickeloid Metals need only be stamped and formed — then assembled. By capitalizing on this pre finished *method* of production, this leading manufacturer has eliminated the machinery formerly required for plating, polishing and buffing — saved four or five production steps, and is producing a better end product *with less manpower*. Can you use these advantages in *your* operation?

14 finish-to-base metal combinations — sheets, coils, strips.

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NICKELOID METALS
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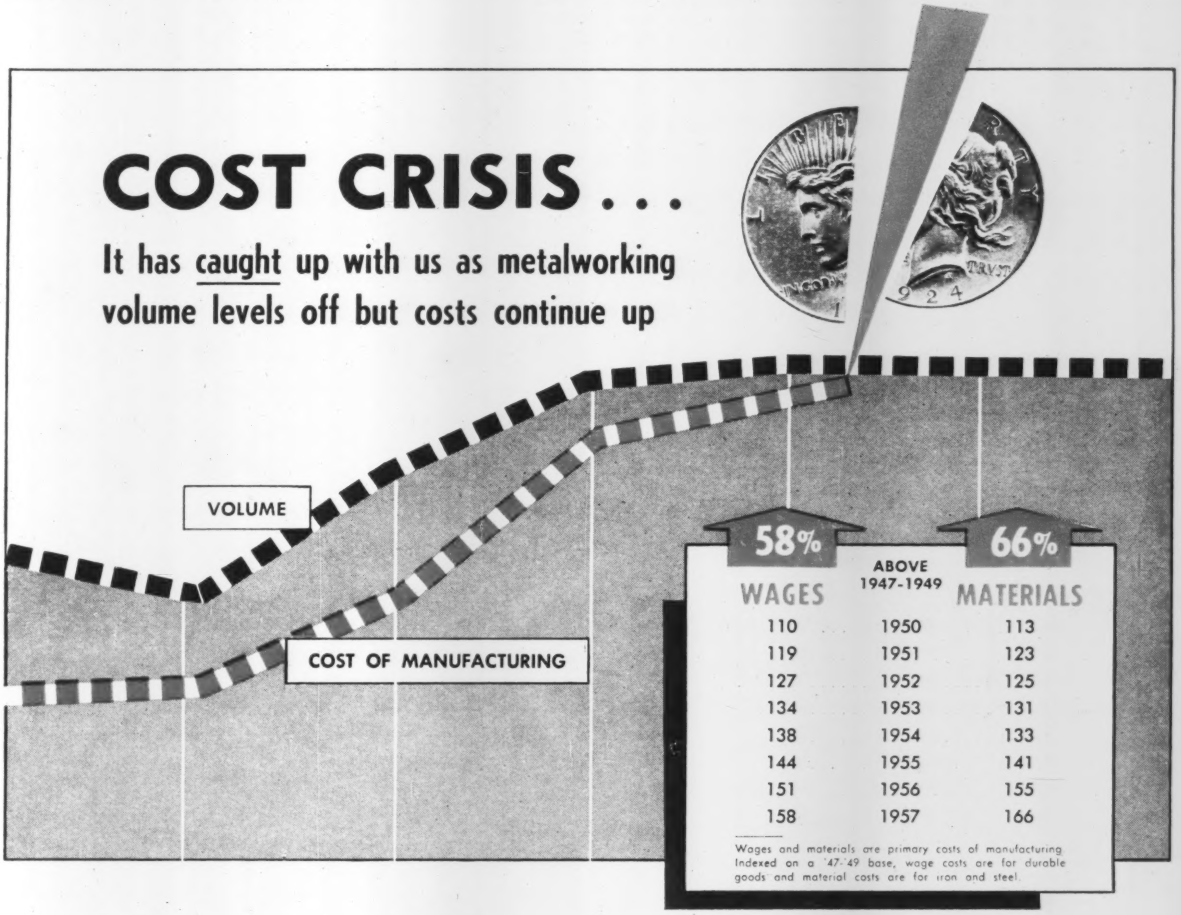
AMERICAN NICKELOID COMPANY
PERU 1, ILLINOIS



COST CRISIS . . .

It has caught up with us as metalworking volume levels off but costs continue up

WAGES	ABOVE 1947-1949	MATERIALS
110	1950	113
119	1951	123
127	1952	125
134	1953	131
138	1954	133
144	1955	141
151	1956	155
158	1957	166

Wages and materials are primary costs of manufacturing. Indexed on a '47-'49 base, wage costs are for durable goods and material costs are for iron and steel.

The Cost Crisis: How To Beat It

You can increase your profit power by lowering unit manufacturing costs with more efficient equipment. Too few companies recognize that truth, let alone act on it. Has yours?

METALWORKING this year faces its most challenging crisis since World War II.

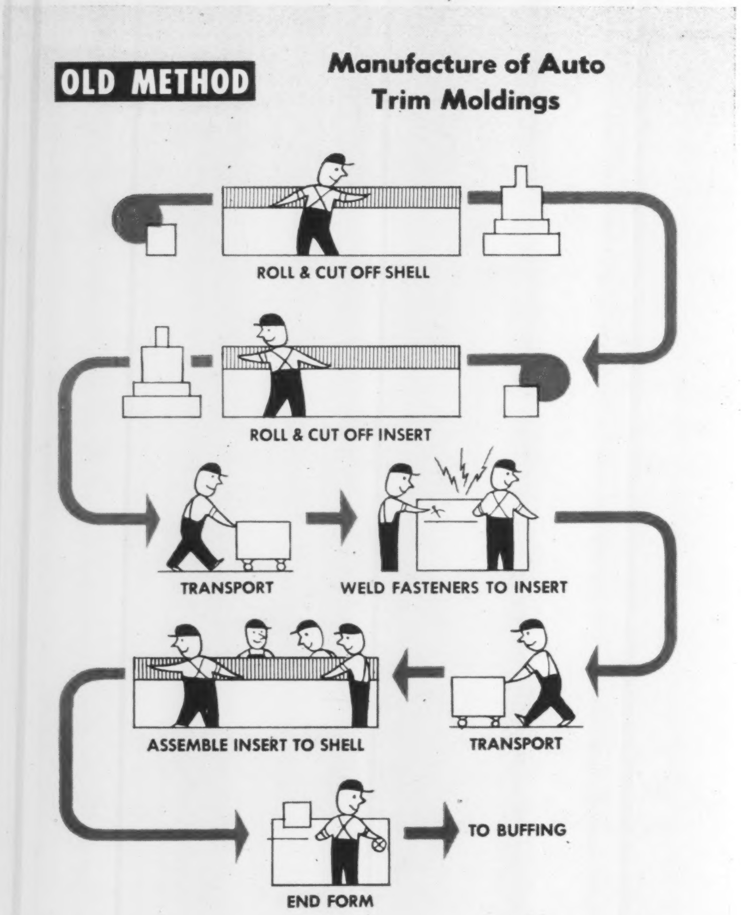
It's the cost crisis—created by leveling or shrinking volume, greater resistance to price increases, and continuing upward cost pressures.

The problem of soaring costs has been with us for two decades. In steel, for example, average hourly payroll costs skyrocketed 253 per cent from 1937 to 1957. Output per manhour edged up only 50 per cent. That trend will continue through 1958.

Steelworkers received a 5-cent cost-of-living increase on Jan. 1. On July 1, they will get 13 to 14 cents under the automatic wage increase provision of their three-year contract. On the same date, they have the prospect of several more cents per hour as a cost-of-living adjustment. It means steel employment costs will go up 20 to 22 cents an hour this year. They will trigger higher steel prices in July and higher material costs for metalworking companies. The precedent in steel will inspire demands for comparable wage boosts in other industries.

New Urgency—In past years, the dramatic climb of metalworking's sales volume has blurred the urgency of the cost crisis. As wage and material costs became heftier in a sharply expanding economy, the solution was obvious and easy: Pass along cost increases by jacking up selling prices.

This year, few metalworking companies will be able to offset all their new wage and material costs via the price adjustment route. Resistance



to price boosts is great. There are few, if any, scarcities.

Too Much Capacity—Many metalworking executives have been shocked to discover that we temporarily have more productive capacity than we can use. Postwar industry, encouraged by spiraling demand, launched tremendous expansion programs. So vast and rapid was our expansion that we not only caught up with demand—we exceeded it.

We now have the capacity to produce more than 140 million tons of steel annually. Best estimates place 1958 demand in the 100 million to 110 million ton range. That's a lot of steel, but expressed as a percentage of today's capacity, it doesn't look good.

The automotive industry could produce 10 to 12 million passenger cars. This year, it hopes to make about 6 million—a lot of automobiles, but they represent only 50 to 60 per cent of the industry's capacity.

For the Future—The outlook is similar in most of our basic industries: Although capacity may prove inadequate for the burgeoning demand of the early 1960s, it's excessive now.

The surplus is a powerful psychological prod to economize, if only because the facilities standing idle are a big expense.

Threat to Profits — While costs get bigger and offsetting price revisions are resisted, our profit power is endangered if volume falls, holds level, or even gains a little.

In many cases the cost crisis has already caught up with us. Look at your own profit trends for proof. Or, if you are one of the lucky or smart few whose earnings are holding up well, study the general trends. A survey of 4300 companies by the National Association of Manufacturers reveals four-fifths expect 1958 dollar sales volume to equal or surpass 1957's, but only one-fifth expect profits to improve. What's more, a third expect their net income to shrink.

Three Steps to Profit—Recognizing the seriousness of the cost crisis, the editors of STEEL asked several hundred thoughtful metalworking managers to appraise this year's problems and to suggest courses of action that would help their companies maintain their profit power. They suggested:

1. *Trim Away the Fat.* The managers were almost unanimous in their belief that during the easy boom period most companies had accumulated a lot of unnecessary and expensive costs in every phase of their operation.

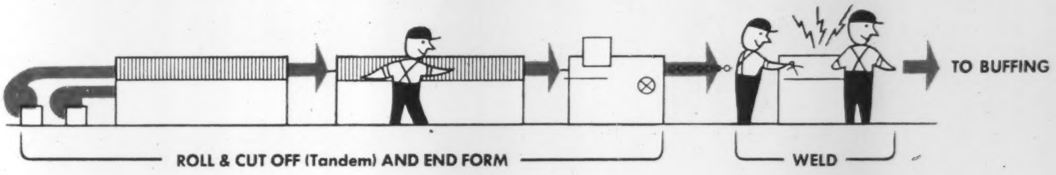
2. *Better Marketing.* The managers recognize that marketing has lagged, largely because selling has been too easy in an era in which demand generally exceeded supply. This year, many plan to co-ordinate and sharpen their marketing organizations and practices.

3. *Lower Unit Production Costs.* While the metalworking industry has purchased vast quantities of new productive equipment in the past decade, much of it has been designed to fatten capacity. As a rule, it sharpened efficiency—but not always to the degree possible.

Solving the Problem—How will you meet the cost crisis? By paring overhead? Good. By improving marketing? Excellent.

But the area that offers the most

NEW METHOD Cuts Production Cost 71%



Two form rolling machines were moved together and linked so the stainless shell and galvanized insert are formed, cut off, and assembled in one operation. The parts are shuttle fed to a press for end forming and move on a conveyor to the welding machine. The line now requires only three operators

How Randall Beats the Cost Crisis

TRIM MOLDINGS, turned out in high volume, consist of contoured stainless steel shells, backed with galvanized steel inserts. Fasteners must be welded to the inserts.

Until about three years ago, Randall Co., Cincinnati, made such moldings on the line shown at the left. Company engineers re-evaluated the molding design and the production steps necessary to achieve it. Their continuing drive to boost the line's efficiency has led to the layout above.

Robert Welles, methods engineer, recommends this approach for getting minimum cost production: Begin by devising the simplest, fully automatic line to turn out the product. Then, based on what you know about quantity requirements and your working capital, decide how much of the automatic operation you can afford and which steps will have to remain manual.

HOW SAVINGS FIGURED

Roll & Cutoff* . . .	9.55%
~~Roll & Cutoff . . . .~~	~~9.55%~~
~~Transport . . . . . .~~	~~0.80%~~
Weld	19.13%
~~Transport . . . . . .~~	~~0.80%~~
~~Assemble . . . . . .~~	~~39.50%~~
~~End Form . . . . . .~~	~~20.67%~~
Old Cost Total	100.00%

Saved 71%

*With the new process, the cost of tandem roll, cutoff, and end form equals the previous roll & cutoff cost.

dramatic benefits, say our respondents, is in manufacturing. Here's the solution to the cost crisis they favor: Lower unit manufacturing costs through the installation of new, more efficient equipment, or the modification of equipment to make it more efficient. They take this stand even though they spent billions for new equipment during the recent expansion phase.

Equip for Efficiency—One company president proudly showed us two large and expensive pieces of equipment. Then he described a relatively minor item that would tie the two together. Its cost: $3400. Its benefits: Replacement of three men doing manual operations and the integration of the two major equipment items to increase the efficiency of both.

What's Needed—Once you find opportunities to reduce unit manufacturing costs, ask yourself what it costs not to do it. That question is even more important than: What does it cost to do it?

But how do you find the present and possible cost figures? The equipment manufacturers and venders should be able to help. Yet, often they are not set up to supply you with the mathematics. Maybe they haven't had to in the recent sellers' market. Maybe they can't fully understand your problem.

The initiative has to be yours. It has to be the job of top management to encourage its production supervision, its engineering management, and its purchasing officials to seek ways to cut manufacturing costs with better equipment.

It has to be the job of the middle

What Will Be Your Major Problem in 1958?...

STEEL'S EDITORS have interviewed nearly 500 metalworking executives, asking the above question. The answers:

Controlling costs	**56% of replies**
Marketing	**41% of replies**
Other	**3% of replies**

Most of the other major problems mentioned also tie in with costs and marketing. Examples: Improving labor relations, finding more efficient personnel, developing new products, getting adequate financing.

Many of the respondents echoed this belief of A. T. Colwell, vice president, Thompson Products Inc., Cleveland: "Both marketing and costs will be important to us in 1958, but, to some extent, our ability to market is dependent upon our ability to cut costs." So, STEEL's editors asked this question:

Where's your most promising opportunity to control costs in 1958?

The answers:

Revamp facilities or purchase new, better equipment	**47% of replies**
Reduce overhead	**31% of replies**
Cut cost of raw materials	**13% of replies**
Pare selling expense	**9% of replies**

The conclusion is clear: Controlling costs is the most important problem faced by metalworking in 1958. And the most promising way to keep costs in check is through revamped facilities or the purchase of new, more efficient equipment.

management people in production, engineering, and purchasing to take the initiative to discover cost reducing steps and report them to top management.

Then it's management's responsibility to give the recommendations careful consideration.

The Gains — Re-equipment or equipment modification can pay tremendous dividends. The accompanying exhibit (Pages 104 and 105) shows how the Randall Co. cut its production costs.

Another Example—One of the components of bathroom scales, built by Detecto Scales Inc., Brooklyn, N. Y., is the platform assembly. It has four parts. An operator put them in place, then loaded the assembly into a power press that turned a flange to complete the production cycle.

Limited output and high unit costs led Detecto engineers to consider some form of automatic assembly. The answer: An index table with a series of fixtures that held the parts in proper location.

Now the operator puts the parts on the index table. It turns to deliver assemblies to the press for flanging. As a completed assembly is ejected at the rear of the press, a new job moves into place.

The addition of the index table has given Detecto a 200 per cent increase in production at no sacrifice in quality. In terms of unit costs, that means a reduction of 66 per cent.

What has happened at Randall, Detecto Scales, and many others proves that you can still reap substantial benefits by lowering unit expenses. Unfortunately, not enough companies recognize that truth, let alone act upon it. Has yours?

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*

COMING NEXT WEEK—To spur metalworking companies to seek new ways to lower unit production costs, the Editors of STEEL will announce the first Cost Crisis Competition next week. Watch the Feb. 10 issue!

STEEL
February 3, 1958

Technical Outlook

FERROSILICON— Electro Metallurgical Co., a division of Union Carbide Corp., New York, is offering steelmakers a new pig-cast form of 75 per cent ferrosilicon. The company expects it will improve silicon recoveries and reduce handling problems.

IMPROVED KIRKSITE— The new Hi-Phy Kirksite (which supplements National Lead Co.'s old "A" formula) may do much to encourage the trend toward temporary tooling. The alloy cuts die weights by about 20 per cent and has about 400 per cent greater impact strength than "A." Other advantages: Better grain structure, more resistance to creep, better tensile and compressive strength.

KING-SIZED TITANIUM PLATE— Titanium Metals Corp. of America, New York, has used its Ti-75A to fabricate a plate that's 75 by 224 in. by 3/16 in. thick. It'll be used to make a reactor vessel handling corrosive materials. TMCA expects titanium to find increased use in processing equipment because it withstands chemical attack by many hard-to-handle corrosives such as chlorides, hypochlorites, chromic and nitric acids, sulfuric acid, anodizing solutions, and oxidizing agents.

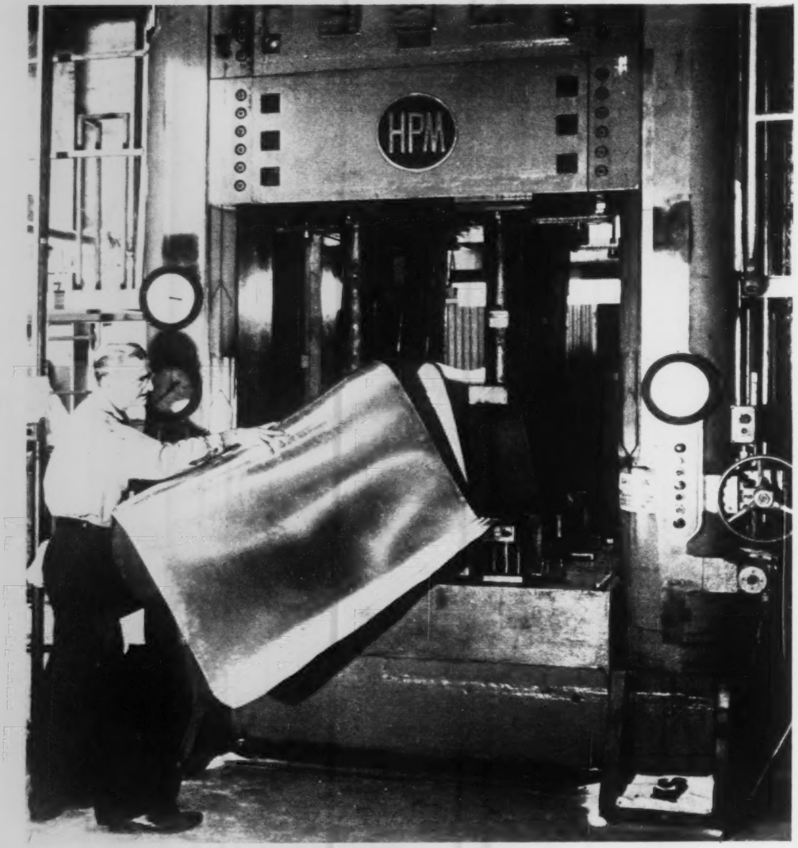
PAPER BASE BUSHINGS— Grinding wheel bushings, made of a new paper base phenolic resin, eliminate scoring and galling of steel arbors and cost less than those made of aluminum or laminated plastic strip, says Taylor Fibre Co., Norristown, Pa. Supplied as original parts or as reducing bushings, the plastic tubes withstand the temperatures used in curing molded grinding wheels.

IDEAL NUMBERING SYSTEM— A critical look at the part numbering system of any medium to large company is in order. Nonuniformity, lack of reference to source, loss of supersedure data, and complicated prefixes and suffixes lead to misunderstanding and production tieups. The ideal numbering system, says D. C. Bowen of RCA's Electrical Standards Section, should have simplicity, freedom from unnecessary changes, and long range flexibility. He suggests using numbers only, eliminating letters or combinations of letters and numbers. The system also should be independent of company growth or diversification, changes in personnel, and changes in technology that do not affect interchangeability of parts.

PROBLEM SOLVED— When oily stampings stuck to the smooth surface of its conveyor belts, M-H Standard Corp., Jersey City, N. J., turned to Sharonart, a textured metal strip, to provide a rougher metal surface. It's made by Sharon Steel Corp., Sharon, Pa., by passing carbon, stainless, or coated steel between heavy rolls. One has a pattern that produces a pebbled grain surface. Sharonart was developed for use in auto trim, airplane interiors, hardware, appliances, and office equipment. Sharon says this is the first use in heavy equipment.

ISOTOPE MEASURE FOILS— Industrial Nucleonics Corp., Columbus, Ohio, has developed a technique to measure thin metal and plastic foils. It is expected to help in finding ways to improve the processing of materials. Low-energy electrons from a radioactive isotope of krypton are directed toward the material. Detectors convert the energy passing through the foil into an electrical signal that can be fed to an automatic control device.

BARREL FINISHING NEWS— A new system is claimed to slash finishing time as much as 70 per cent. It also will finish inside diameters of parts. Heart of the system is the Vibraslide machine which vibrates while it rotates. It's made by Elliott Mfg. Co., Binghamton, N. Y., and distributed by Minnesota Mining & Mfg. Co., St. Paul.



Plastic stretch form dies are frequently adapted for hydraulic presses. This aircraft part gets a first draw, an anneal, and a final draw

Plastics in the Toolroom

Reinforced epoxies can save up to 70 per cent of the cost of conventional dies. Delivery time is halved. Automakers are using more epoxy caps on cast metal bases

PLASTICS have been promoted to a full partnership with metals in the toolroom. Their properties complement many metals, extending and enlarging the usefulness of the tool and die maker: (See list of applications on Page 110.)

In general, four groups of plastics are used for tooling: 1. Polyesters. 2. Silicones. 3. Phenolics. 4. Epoxies.

Lawrence Sparrow, senior manufacturing research engineer, Republic Aviation Corp., Farmingdale, N. Y., feels that the epoxies are the most versatile for industrial use. It's a family of many members. All combine perfectly with various cloths and fibers. Some formulas are for drop hammer dies; others give the hardness needed for draw dies.

Mr. Sparrow says that epoxies are being widely used for:

1. Drop hammer dies (especially as caps for Kirksite).
2. Stretch forms to replace the older polyesters and phenolics.
3. Contour checking fixtures.
4. Matched dies.

Here are the advantages of epoxies:

1. Low Cost. Unskilled labor is easily trained. The only equipment you need is a mixer. Saving in tooling costs can be close to 50 per cent.

2. Accuracy—no machining is needed. When cast against an accurate mold or part, the tool or die is an almost perfect replica.

3. Light weight—Epoxy tools weigh 98 lb per cubic foot. Kirksite, a common, short run die material, weighs 432 lb per cubic foot.

4. Flexibility—By changing the formula, the characteristics of the epoxy can be changed. Shrinkage is low.

Ingredients — Epoxies are the condensation products of a dihydric alcohol and epichlorohydrin which are condensed by several other substances.

Materials can be purchased by tradename or number designation. Or you can combine the several basic materials into formulas of your own. Republic Aviation uses its own formulations in many applications.

Topper—That company used to make most drop hammer dies from Kirksite (female) and lead (male). Kirksite had to be hand finished before the lead was cast against it. Lead was hand scraped to allow for metal thickness.

Cast phenolics on concrete cores were tried first. They were too brittle. Next came polyesters reinforced with glass cloth, but the aluminum work was scratched by the glass fibers. Changing to straight fibers instead of cloth didn't help because the die facing shrank.

An epoxy-glass laminate on an epoxy core didn't work either. Small bubbles broke the surface and marred aluminum workpieces.

Today, the male dies are Kirksite capped with a flexible epoxy; Females sections are capped with a hard formulation. Encourged by the excellent savings, company engineers are searching for a way to cast both male and female dies in a single pour.

Start—In Detroit, the all-plastic die is giving way to Kirksite capped with epoxy. It's used mainly for low volume export or special body parts.

Chrysler Corp.'s Fred Lyijynen says that about 30 per cent of his firm's tooling program will be in plastics. (That figure includes jigs and fixtures.)

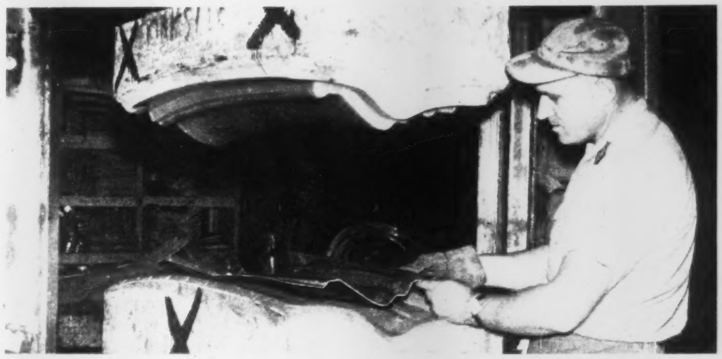
He gives this advice to the small company: In starting a program, train a tool and die maker first. Production people can help with such things as molding operations, repairs, fabric cutting, resin mixing, and tool cleaning.

Here are the five basic steps needed to produce cast epoxies:

- Mold: Take a plaster splash from the master model. Dry the plaster mold to below 2 per cent moisture content to prevent surface distortion. Coat the mold surface with a suitable parting agent. (Occasionally, the master model may be reproduced directly from a part.)
- Form: Build a form around the mold to contain the liquid resin. It may be made of wood, metal or plaster. Metal aids in heat dissipation.
- Resin: The casting resin is a liquid which usually contains a hardener to permit curing at room temperature. Epoxies are modified by flexibilizers, fillers, diluents, and additional hardeners. The components are thoroughly mixed and poured into the mold.
- Cure: At room temperature, complete curing takes more than ten days, but the die can be removed from mold in 24 hours.
- Cores: If the tool is large, use a core to reduce costs. It could be other types of epoxies, resins with a high filler content, plastic foams or cast metals like Kirksite. In some case, consider hollow cores.

Do It Yourself—Republic Aviation believes in making its own formulations. The flexibility gained helps solve many unusual problems like this one:

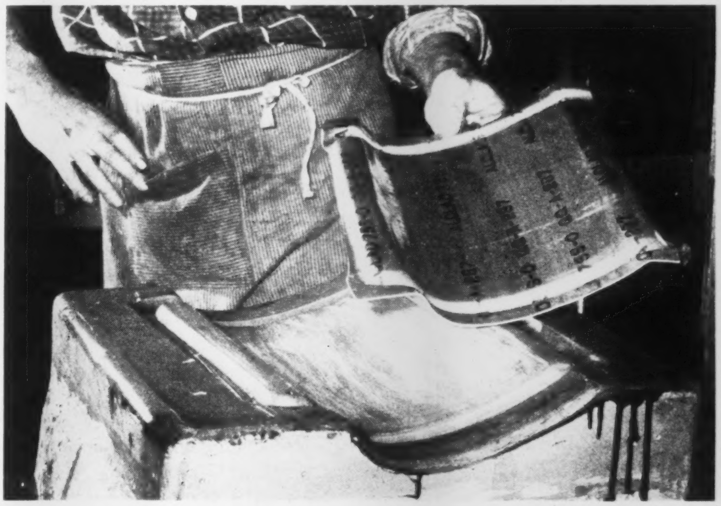
Drop hammer dies and other large tools are stored outdoors. Epoxies weather well at first, so no difficulty was expected from capped dies. However, after a short period of winter storage, the hard epoxy on a female die cracked and separated. Cause: the dif-

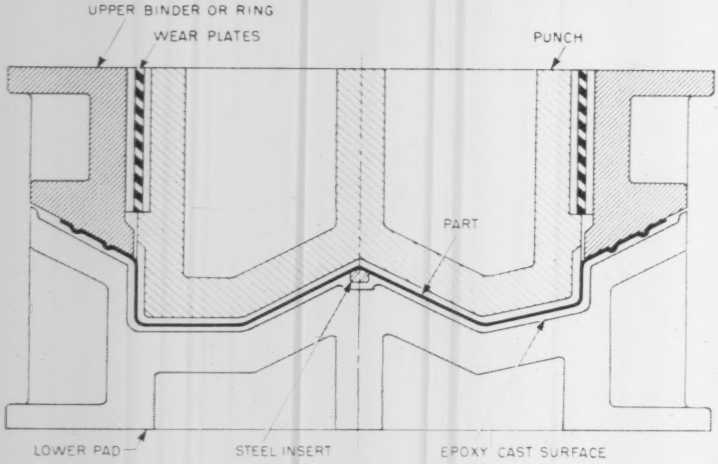


Comparisons: Capped Kirksite above and all-epoxy below

	Kirksite	Epoxy
1. Plaster female foundry pattern	Yes	No
2. Plaster (male) face cast	Yes	Yes
3. Sand mold from the foundry pattern	Yes	No
4. Rough Kirksite female	Yes	No
5. Rough Kirksite male cast against rough Kirksite female	Yes	No
6. Plaster face cast is coated with parting agent and placed in form	Yes	Yes
7. Kirksite female is located, allowing ¾ in. to 1½ in. spacing all around	Yes	No
8. Components are mixed and poured	Yes	Yes
9. After cure, the finished female is coated with parting agent and placed in form	Yes	Yes
10. A small Kirksite block is cast with press tie-in bolts	No	Yes
11. The Kirksite male is placed, allowing ¾ in. to 1½ in. spacing all around	Yes	No
12. The Kirksite tie-in block is located	No	Yes
13. Flexible components are mixed and poured	Yes	Yes
14. After cure, the finished die is removed	Yes	No

Source: Society of Plastic Engineers.





Here is a typical plastic-faced die for prototype or low production drawing. Punch, pad, and binder ring can be of iron, Kirksite, or aluminum. Use steel insert only for runs of more than 500 pieces

ferent contraction of the two materials.

A formula with the same coefficient of expansion as Kirksite was considered, but it seemed simpler to use a flexible interlayer. It worked.

Hot Mixtures—The most common hardeners are called aliphatic amines. They mix easily and cure well. However, the mix gets quite hot, and, due to the insulating properties of plastics, it is hard to dissipate the heat.

One way to beat the heat is to mix the epoxy with a polyamide. One such material is made by the Chemical Div. of General Mills Inc., Kankakee, Ill. The lowered heat improves the casting properties by eliminating bubbles. The firm claims that 50 lb castings work out quite well. When mixed with epoxies, polyamide resins act as

AN EPOXY FAMILY . . .

Physicals depend on composition. Here is a typical family of prepared types. By mixing ingredients to your formula, you can build your own properties

Material	Type	Features	Applications
A	Laminating	Room temperature cure, opaque, close dimensional accuracy, good wetting	Duplicate masters, check fixtures, drill jigs, spotting models, spray masks, foundry patterns
B	Laminating—Brilliant White	Room temperature cure, opaque, close dimensional accuracy, good wetting	Duplicate masters, check fixtures, drill jigs, spotting models, spray masks, foundry patterns
C	Laminating	Superior hanging properties, high luster, room temperature cure	Good surface for laminated tools
D	Laminating—Brilliant White	Superior hanging properties, high luster, room temperature cure	Good surface for laminated tools
E	Laminating	Transparent, low viscosity, combines with colors and fillers	Noncritical applications
F	Transparent Laminating and Casting	Unfilled resin for do-it-yourself formulation	High quality production parts, tooling
G	Laminating Resin	Resists higher heats, requires oven cure	Glass fiber laminating molds Glass fiber laminated parts
H	Metallic Casting	Nonsettling filler, low viscosity, room temperature cure; casts up to ¾ in. thick; metallic appearance	Used with metal core in draw dies, metal form dies, drop hammer dies
I	Flexible Casting	High impact, tough, room temperature cure; eliminates need for part clearance; casts up to 2 in. thick	Used with metal core for Ceco dies and draw dies
J	Casting	Room temperature cure; casts up to 3 in. thick; easy to mix	Draw dies, form blocks, Keller models, vise jaws, foundry patterns, mill fixtures
K	Die Surface	Superior abrasion resistance	Used with metal core for draw dies, router guides, gages

Source: Rezolin Inc., Los Angeles.

both flexibilizer and hardener. According to Republic Aviation, it is relatively thick and fillers are hard to add.

Another heat beater is aluminum fibers for reinforcing. Bakelite Co., division of Union Carbide Corp., New York, calls its formula an Epoxy-Alloy (EA). The high conductivity works two ways: It carries away heat during setting (exotherm) and promotes cooling for hot draws.

Or, you may mix an epoxy-amine (called an adduct). This material is simply a partially reacted (or cured) mixture of epoxy and an amine hardener. By reacting the epoxy with a portion of its hardener before casting, some of the heat is reduced.

There are other hardeners that are showing gains in popularity. Shell Chemical Co. has a curing agent that improves castability for single pour, drop hammer dies.

Helper—Fillers reduce shrinkage, increase strength or reduce the heat given off during hardening. Most fillers are finely powdered materials — aluminum, alumina, iron oxide, and calcium carbonate. Some investigators are taking a prolonged look at sand and gravel. Such formulas frequently require as little as 10 per cent epoxy resin.

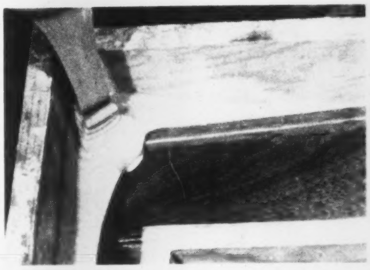
Other Face—There are a few disadvantages. Epoxy resins and their hardeners are expensive. The amine hardeners are toxic and may cause dermatitis unless gloves, skin creams, and protective gear are used. Vacuum dust removal is helpful.

But advantages outweigh drawbacks. Temporary epoxy tools can produce parts until the permanent tooling is ready. If you break or wear out a die face, it is simple to cast another.

You don't need heavy moving equipment—epoxy dies and tools are usually light. One man can handle them. Storage problems fade.

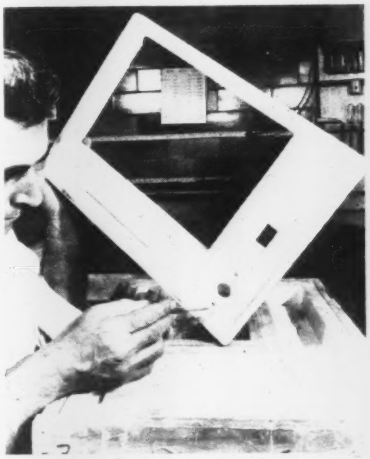
In most cases you don't need a lubricant—the surface is nonsticking and cuts down galling and tearing—and it doesn't rust.

Epoxies may answer some of your tool and die scheduling problems.



First step in making a sample heater part is pouring the liquid epoxy into a form

Glass cloth is the reinforcing material. Operator is placing cut sections in form



When it's set, any unnecessary flash is ground off

Prototype heater is ready for sales force to use in the field

Plastics Cut Tooling Costs

LIGHT metal fabricators say that plastic tooling solves many of their cost problems.

Arvin Industries Inc., Columbus, Ind., has demonstrated some of the possibilities. It makes a wide variety of light metal products.

Applications—Arvin's many prototypes are made of epoxy plastics. The first model for one of its heaters was made in one-third the time conventional metal tooling took.

A production die for forming metal furniture tubing is made of epoxy, has excellent impact resistance, and the material doesn't mar the tubing. Additional finishing after forming is unnecessary.

The firm also uses glass-reinforced epoxy jigs and fixtures for quality control. Because the material is dimensionally stable, it contributes to accuracy.

Much Faster — Epoxy tooling compounds can be cast or laid up to the final stage in one operation. On some production changeovers, Arvin was able to make tools over a weekend. Conventional types require several weeks.

Other Advantages—Close tolerances can be held in fabrication. Dimensional stability is maintained throughout tool life. The resins cure at room temperature, hold tightly to inserts, bond directly to backing structures, and adhere strongly to reinforcing materials.

Epoxy tools are lighter and easier to handle than conventional tools, says Bakelite Co., a division of Union Carbide Corp., New York.

School — In co-operation with Mainland Plastic Industries Inc., Hazel Park, Mich., Arvin has set up a training program for its employees.

Rack of parts ready for immersion in the hot M-629 solution

Stripped Parts Are Ready for Replating

Acid solution strips the chrome off bumper rejects and reactivates nickel underplate. Rechromed surfaces are bright and lustrous, have no whiteness or streaks

CHANGEOVER to a dry acid replacement salt for stripping chrome from rejected auto bumpers at Houdaille Industries, Huntington, W. Va., brought a 50 per cent reduction in the cost of labor for stripping and replating.

The dry salt is Metex M-629, produced by MacDermid Inc., Waterbury, Conn. It leaves the nickel underplate on the bumpers free of etch, smut, and oxide discoloration. Since the nickel is activated as the chrome is stripped, the part is ready for rechroming after a water rinse.

Other Advantages—Gas fuming, a serious problem in some chrome stripping operations, is not objectionable with M-629. Generous gas evolution produces a layer of foam over the solution which traps most of the fumes.

Gassing is continuous during the stripping operation until all chrome is removed

Cost and safety advantages can be gained in storing and handling the replacement salt. Since it is in dry powder form, fiber drums can be used in shipping. Cost savings have resulted from the no-deposit, no-return drums. They are easier to handle than heavy carboys of liquid acid. The dry salt also is safer to handle, store, and use than the liquid acid it replaces.

Procedure — The stripping bath is made up by adding ¾ lb of acid salt to each gallon of water. The solution is maintained at 200 to 205° F.

In 30 seconds, 0.00002 in. of chrome can be completely stripped by immersion only.

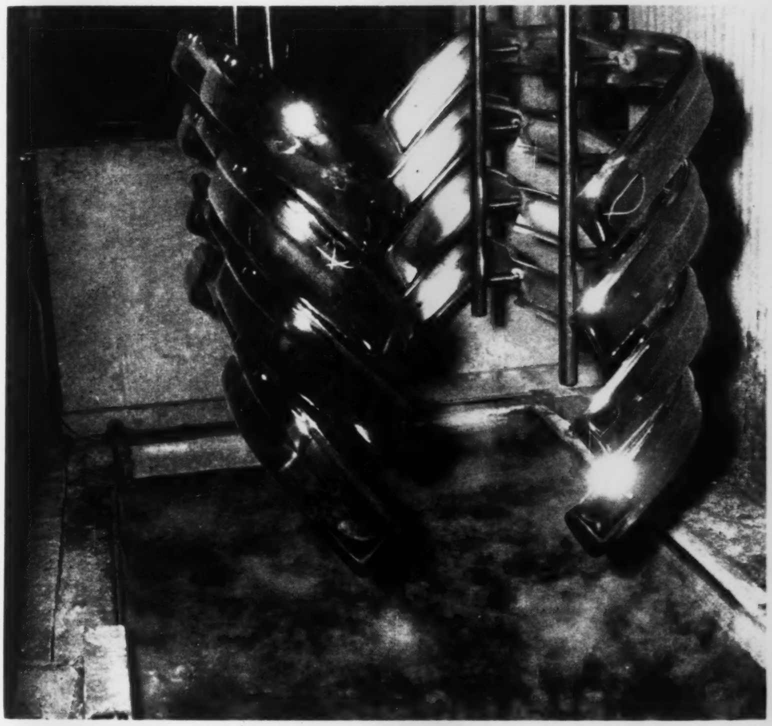
The company adds 50 lb of dry salt to the bath daily. It is dumped every three weeks. Before it was dumped the first time, 7000 bumpers were stripped in 1900 lb of M-629 in solution.

The normality of the fresh solution was 0.73. The solution is titrated against 1N NaOH. Normality is used as a measure of strength rather than converting to ounces of acid per gallon. When the bath was dumped, the normality was 0.93. It contained 0.85 gram per liter of chromic acid, which seems to be the saturation point for the solution as operated at Houdaille Industries.

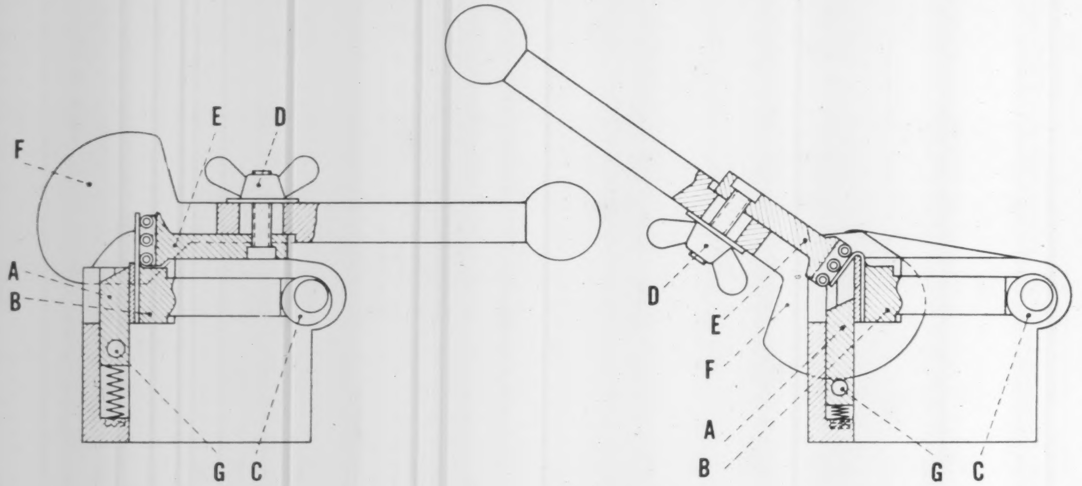
Best Technique—MacDermid Inc. recommends an immersion time of about 5 seconds, removal of the work from the bath for about 10 seconds into the air, and a re-immersion in the solution until the chrome is completely removed (gassing stops).

Slight variations in time work equally well. Removal from the solution for a short interval followed by re-immersion is the important requirement. If it isn't observed, the company says, some chome plates may not strip in M-629.

Another note of caution: If the chromium plate surface is smeared before stripping, a similar smear may show up on the nickel surface after stripping, if the smear originated in the nickel. It is necessary to remove the smear or stain in the nickel by color buffing before rechroming.



Exposed bright nickel requires no buffing and is activated ready for replate



This simple machine, it's claimed, bends test specimens more accurately than other methods. Sample strip is held in place by the support (A), clamp and link (B), eccentric (C). Wing nut (D) adjusts thrust block with three rollers (E) to fit thick or thin specimens. If the test exceeds 90 degrees, the cam (F) contacts a pin (G) in the support, moving it down and out of the way. Specimen (right) has been bent through 145 degrees. Radius plate is between (A) and test strip

Machine for Bend Tests

A standard test may be more precise with the device shown above, says a prominent Dutch laboratory. The same principle might be used on heavier samples

BEND tests aren't always as simple as they seem. Differences of opinion between suppliers and customers attest to that.

The Philip's Research Laboratory, Eindhoven, Holland, has developed a machine which could settle the matter. With a single hand operation, an operator can bend a specimen smoothly over a correct radius through any angle between 0 and 180 degrees.

Advantage—The results of any bend test depend largely on the way it is done. One common way is to secure a test specimen and a mandrel in a vise, then bend the specimen over the mandrel by hand or with a hammer. To get the proper radius, the bending force must be applied close to the mandrel. When a hammer is the bending force, the specimen is shock loaded and cold worked to an unknown degree.

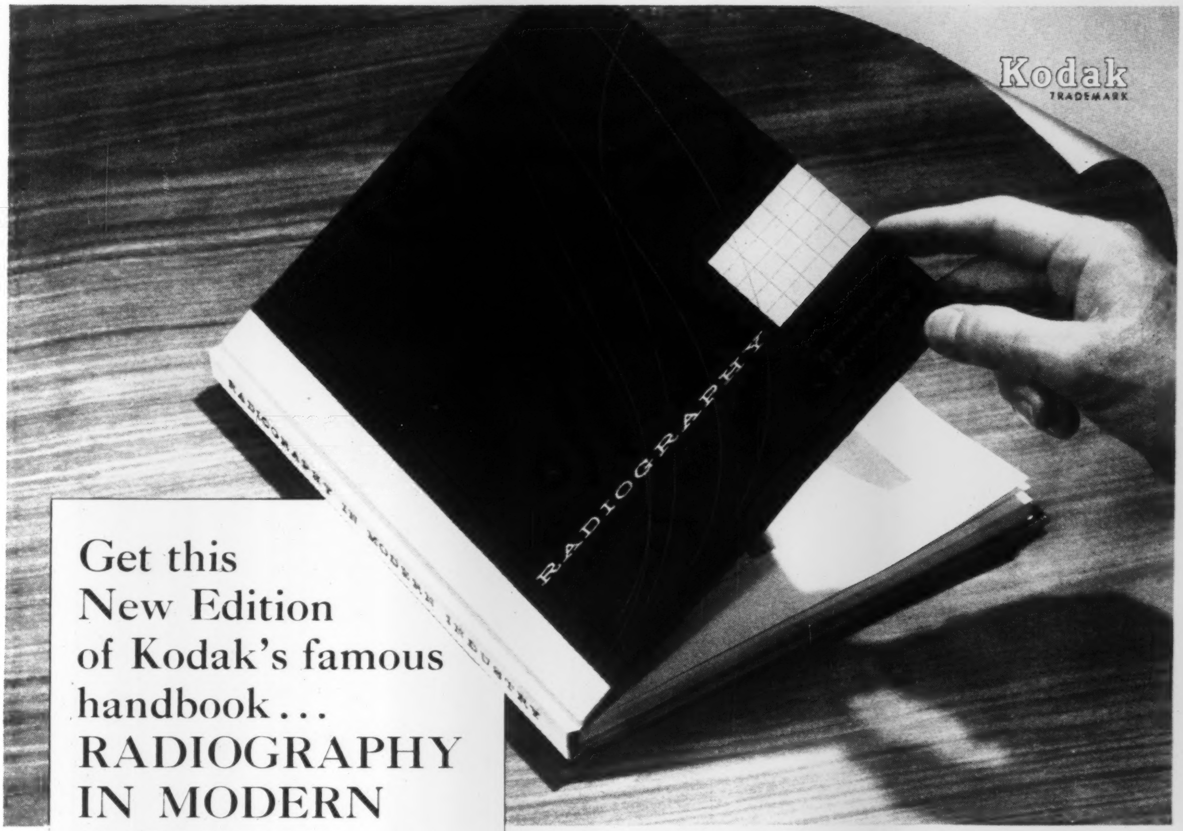
For bends greater than 90 degrees, the specimen and mandrel have to be removed and repositioned. The test is continued by tightening the vise. That method is inexact because the specimen rarely remains close enough to the mandrel. The result: A sharper bend than the test calls for.

Stretch—Some use a die and radius plate. If the die is tight in relation to the radius plate (punch), the specimen is extruded, cold worked and subjected to tensile stress. If the die is large enough to admit the specimen freely, the specimen ends up with a radius smaller than the radius plate.

Construction—The cross-sectional views (above) illustrate how the machine works. The specimen is held against the radius plate by a cam. The top lever follows an arc which is identical to that of the radius plate. Three rollers provide a minimum of friction, so that a true bend is done without shock or tensile loading.

The construction permits unhindered, one-motion bends. Radius plates are interchangeable to provide adjustments for each test. A wing nut and slot in the handle permit the adjustment of the roller to specimens of varying thicknesses.

The same principles can be applied to a larger machine for testing heavier plates, wires or bars.



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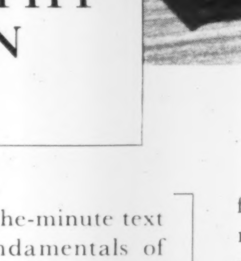

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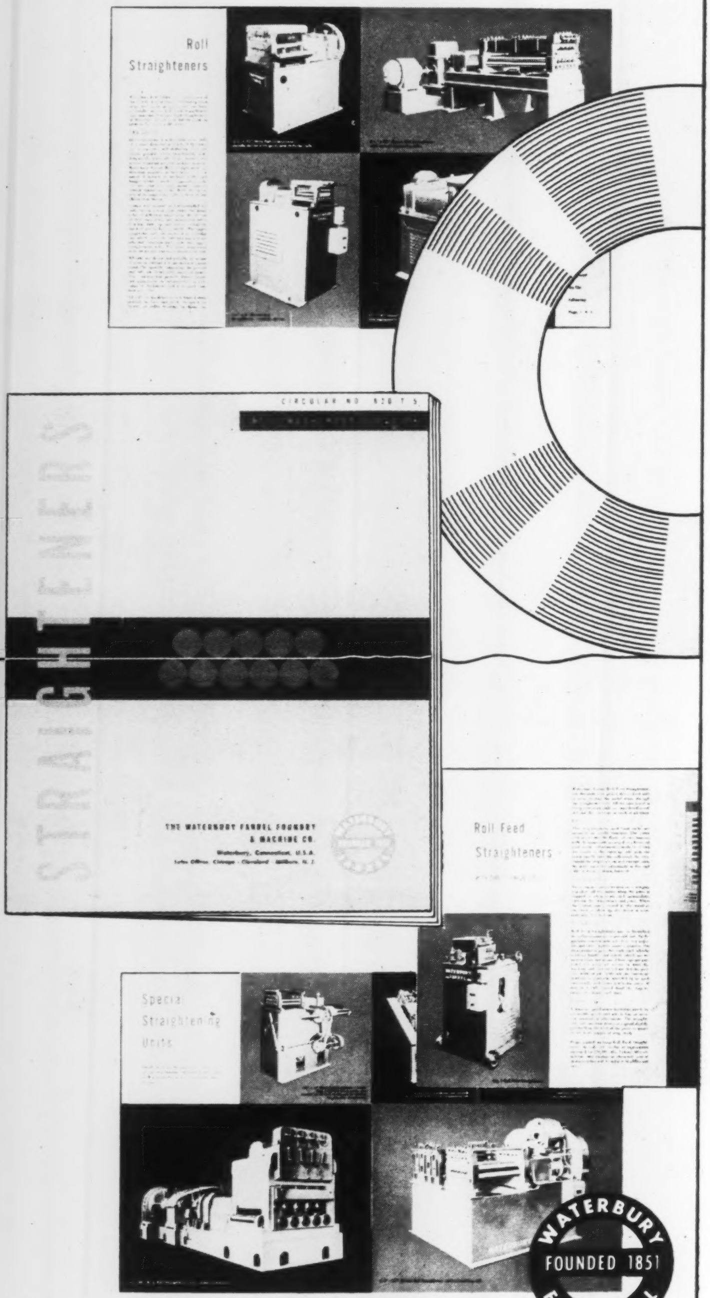

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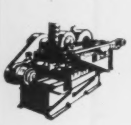
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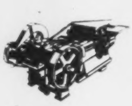
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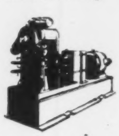
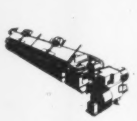
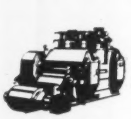
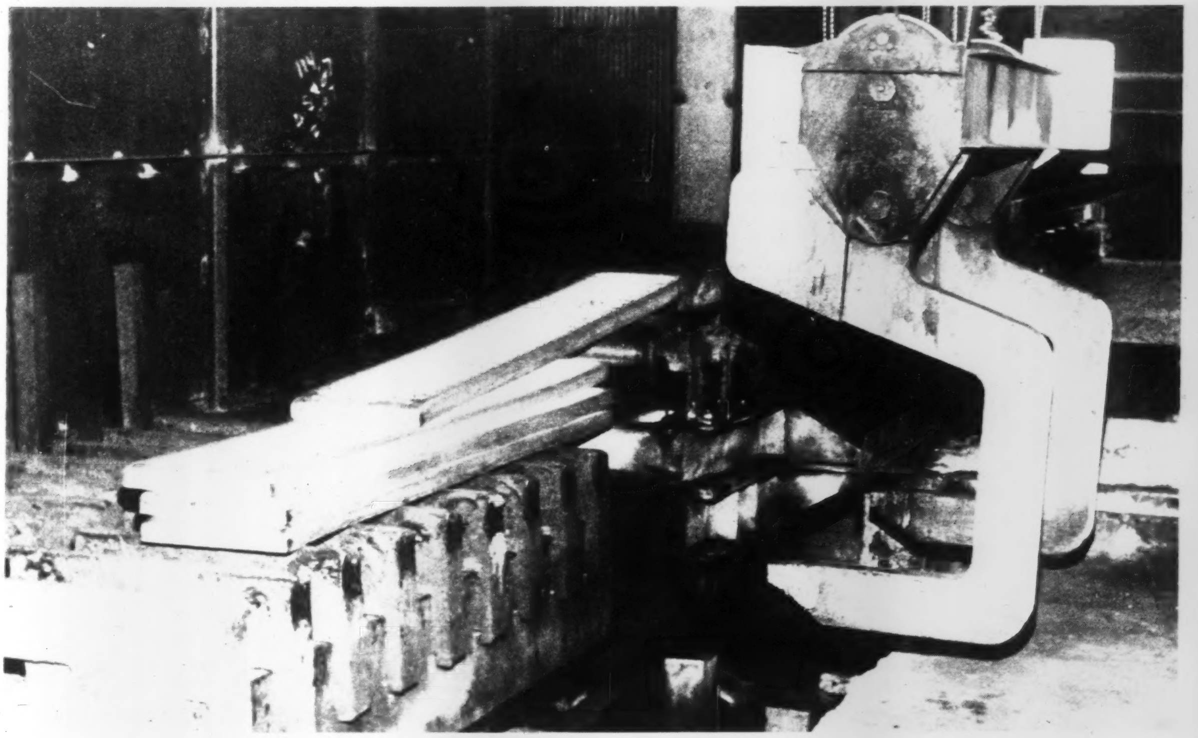

Rolling Mill Machinery


Wire Mill Equipment


Sendzimir Mills and Other Special Machinery



Steel car receives white hot slabs from the blooming mill. When stacked six high, car is moved laterally by hydraulic equipment. Slabs sometimes fall into pit below hook breaking hydraulic connections

Mill Uses Fireproof Hydraulic Fluid

Faced with the high costs of a serious fire, this steel firm decided to try a fluid that doesn't burn. This article tells what it is like and where it's being used

A FIRE convinced Alan Wood Steel Co., Conshohocken, Pa., that it needed better hydraulic fluid.

A white hot slab rumbled off the tilting table and ripped open hydraulic lines. Fluid burst into flames. Before the pump could be stopped, the fire had burned out the electrical equipment on an overhead C-hook. The conveyor system was down for 8 hours.

Function — The incident points up the safety angle in a good hydraulic fluid: It must be safe in dangerous locations. In addition, it must transmit force efficiently and be a good lubricant.

Three types of fluid were considered as a replacement for petroleum hydraulic oil: Straight synthetic, water-based synthetic, and water-in-oil emulsion.

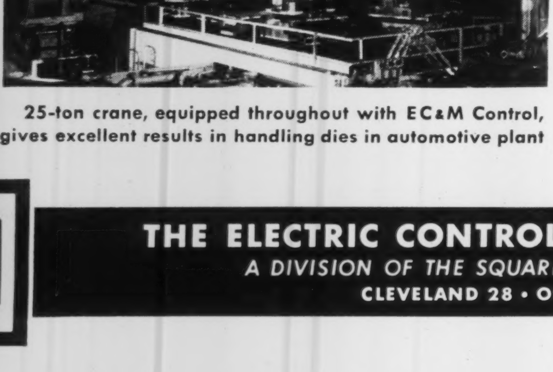
Selection Factors—Straight synthetic was ruled out. It is potentially toxic and can corrode some parts of a hydraulic system. Water-based synthetic causes rust and sludge and needs control of pH and viscosity.

Alan Wood decided on Irus Fluid 902, a water-in-oil emulsion made by the Shell Oil Co., New York. A combination of water, petroleum oils, and emulsifying agents, it costs one-third less than similar fire-resistant hydraulic fluids.

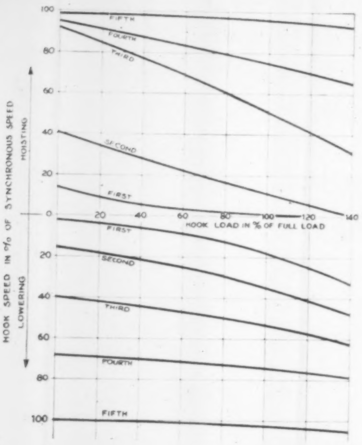
Operation—The tilting table is one step in the conveyor line which transports the steel slabs from the blooming mill to the hot strip mill slabyard. Slabs emerge from the blooming mill and travel along a series of roller tables. They are stacked six high by the tilting

(*Please turn to Page* 120)

Here's Why Men in Command *Specify*



25-ton crane, equipped throughout with EC&M Control, gives excellent results in handling dies in automotive plant



Hook-speed curves tell the story! Nearly flat curves, regardless of load. Braking torque regulated from the simplest of magnetic amplifiers. No costly electronic tubes or complicated bias control involved

THE ELECTRIC CONTROLLER & MFG. CO.
A DIVISION OF THE SQUARE D COMPANY
CLEVELAND 28 • OHIO

EC&M PERFORMANCE-PROVEN EQUIPMENT FOR CRANES

EC&M EDDYMAG* A-C Crane Control

ALL LOWERING SPEEDS SAFE because braking torque is automatically adjusted. Any tendency for the motor to speed up increases the eddybrake torque to insure safe lowering of all loads.

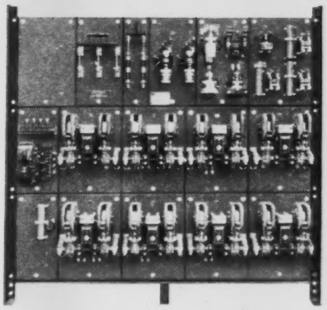
FAST RESPONSE enables the operator to "inch" loads accurately. Speed regulation is excellent, too. On first point, the empty hook starts down and the same point provides slow speed for "inching" heavy loads.

EASIER MAINTENANCE • All EC&M components are standard, mill-type construction—familiar to maintenance men, simple to work with, easy to understand.

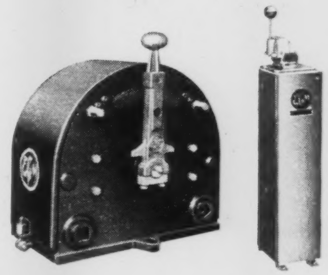
SIMPLE CIRCUITRY • "EDDYMAG" Control uses no sensitive circuits—no tubes to balance. EC&M Frequency Relays, operating from the slip frequency of the motor, provide crane performance unequalled by other methods. Only one plugging relay and one set of acceleration relays required for smooth operation of the a-c wound-rotor motor-driven crane.

Join the men who know performance—specify EC&M Control for your next crane. For complete facts, write for Bulletin 6400

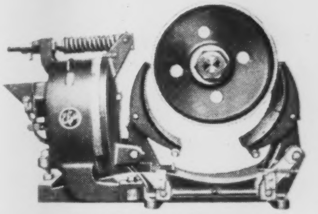
**EDDYMAG is an EC&M registered trademark*



EC&M EDDYMAG Hoist Control uses mill-type contactors and relays—off-point braking helps stop the load

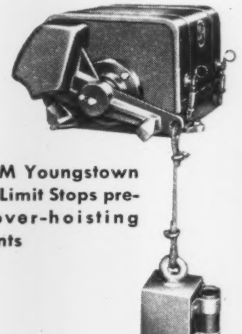


EC&M Master Switches—Cam or Vertical types—are compact, easy to operate

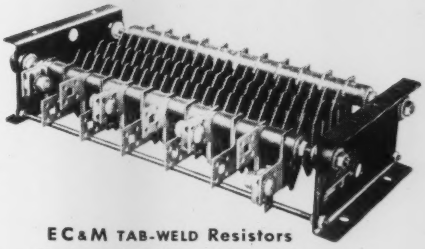


EC&M Type WB Brakes —100% lubricated—dirt can be flushed out

EC&M Manual-Magnetic Disconnect Switches provide a safe and convenient means for "killing" the crane

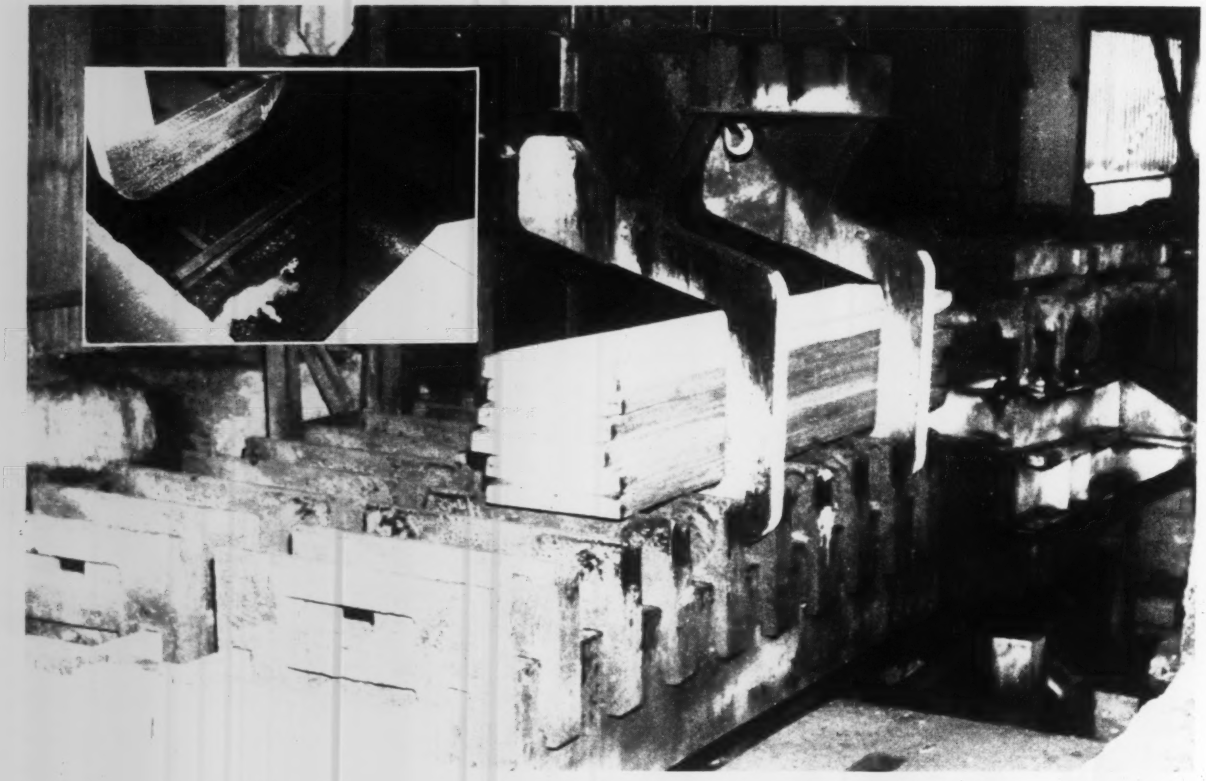


EC&M Youngstown Safety Limit Stops prevent over-hoisting accidents



EC&M TAB-WELD Resistors eliminate burning at the grid eyes and at the tap plates

9812



Electrically operated C-hook picks up stack and places it on a buggy bound for slabyard. Fire below the hook burned out electrical equipment, delayed line for 8 hours.

Maintenance men at Alan Wood can spot leaks quicker. Note bright color (inset) of the new fluid. Tests show that fluid vaporizes to steam with almost no residual flame

HYDRAULIC FLUID . . .

table on a steel car which can be moved laterally. An overhead C-hook picks up the stacks and puts them on a slab buggy.

An operator in a high pulpit operates the table. It is tilted to allow a slab to roll onto the steel stacking car. If they aren't handled correctly, slabs can slide off the stack into the pit below.

Testing—Fire resistance of the new fluid was tested by pouring some on the tilt table rollers after a number of hot slabs had passed over them. A pint or so was also thrown onto a white hot slab. In both cases, the fluid vaporized with a slight residual flame.

Fire-resistance is due to the fluid's relatively high water content—it will not explode or burn readily on contact with extreme heat. The steam blanket effectively reduces temperature and displaces oxygen. After the water has been dissipated as steam, the remaining fluid may burn with an intermittent, luminous flame. The fluid does not support its own combustion.

Hydraulic System—It contains 175 gallons of fluid. A Vickers vane-type pump (15 hp) operating at 1000 psi and 1200 rpm, pumps up to 20.8 gpm. Fluid passes underground to the tilting table. The fluid in the pump (it's only used intermittently) is between 120 and 130° F. Three accumulators, located above the pump and reservoir, insure a constant pressure.

Water is held tightly in the fluid until exposed to a high temperature. To hold evaporation to a minimum, it must be kept under 150° F.

Changeover—There was no need to modify lines, pumps, valves or cylinders, O-rings, seals, or gaskets. Here's how it was done:

1. The reservoir was drained and wiped clean.
2. Cylinders (at the low point of the system) were cleaned thoroughly.
3. Lines were broken at the cylinders and blown out carefully.
4. Small quantities of new fluid were flushed through the lines.
5. The system was reconnected and filled.

The new emulsion has no more effect on packing materials, seals, and hoses than conventional petroleum oil.

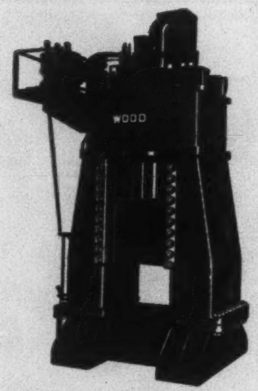
Maintenance—Each shift, a maintenance man checks the hydraulic machinery near the tilting table. A high level of fluid is maintained in the reservoir. Any leaks are reported and corrected immediately.

Makeup is approximately two drums a month, about half that previously used.

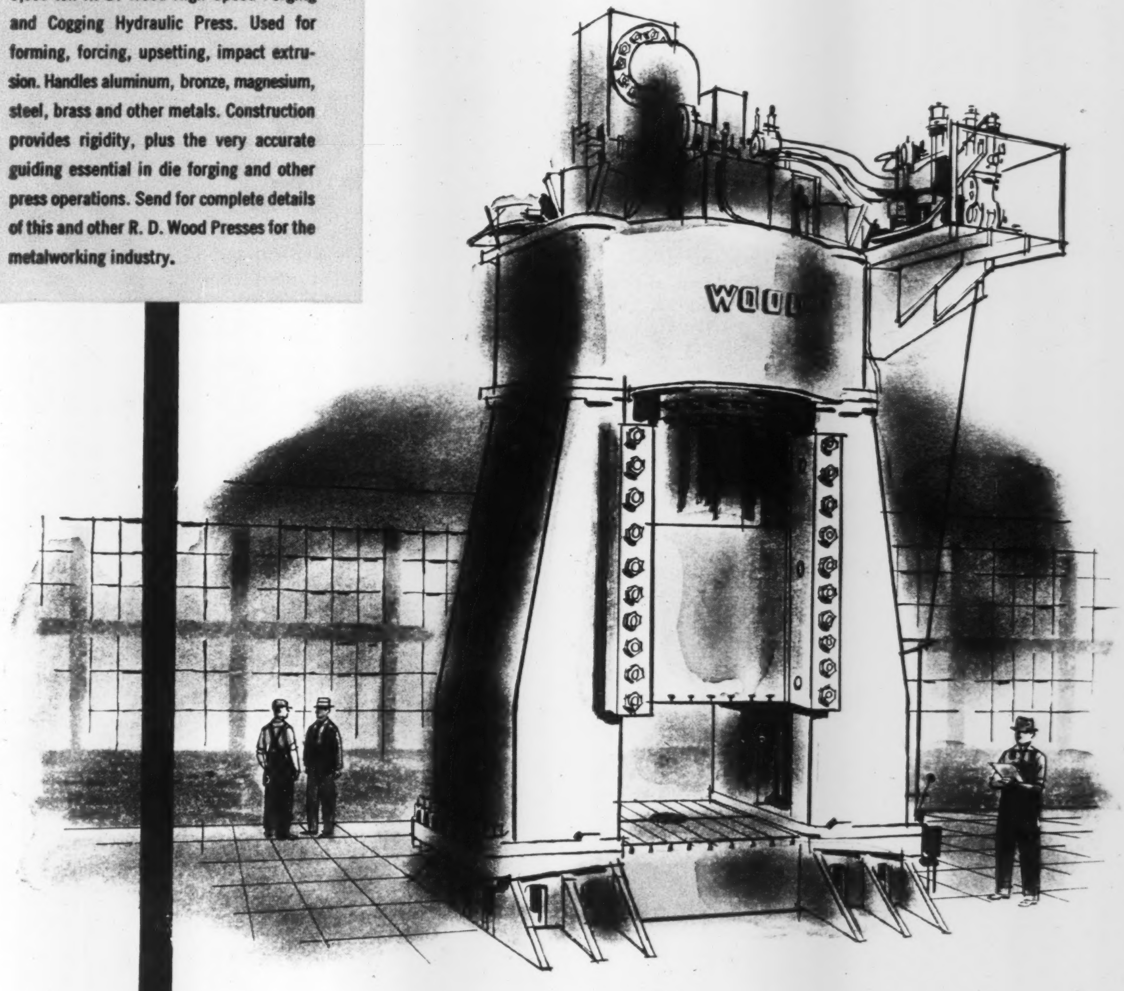
Conclusion—After 12 months of continuous use, Norman Brocht, lubrication engineer at Alan Wood, feels sure that serious fires in hydraulic fluids have been whipped.

The most productive plants use R. D. Wood Presses

For proof, look at production records—and downtime for maintenance. Then watch an R. D. Wood Press at work. See for yourself the smooth, precise operation—the dependable performance—even under tough conditions. Finally, inspect an R. D. Wood Press up close. Notice the soundness of design, the excellence of materials, the scrupulous care given to each detail of construction. These are the reasons why R. D. Wood Presses have been the standard of excellence throughout the metalworking industry.



3,000-ton R. D. Wood High Speed Forging and Cogging Hydraulic Press. Used for forming, forcing, upsetting, impact extrusion. Handles aluminum, bronze, magnesium, steel, brass and other metals. Construction provides rigidity, plus the very accurate guiding essential in die forging and other press operations. Send for complete details of this and other R. D. Wood Presses for the metalworking industry.



R. D. WOOD COMPANY

PUBLIC LEDGER BUILDING • PHILADELPHIA 5, PENNSYLVANIA

Stamping Practices and Tolerances

THICKNESS TOLERANCES

Specify all material thicknesses in decimal equivalents. Tolerances range from plus or minus 0.002 to 0.005 in., depending on the thickness of the material.

PUNCHES

Standard punches are specified in 64ths of an inch. If a size other than standard is required, it will cost extra.

ANGLES

Always specify angles in degrees. Tolerances range from plus or minus ½ degree to 1 degree 30 seconds.

SPRINGBACK

This is governed by the metal and shape of the part. Proper tooling can control it. Metal stampers will handle springback to meet specific requirements.

RADIUSES

Bending radiuses should be not less than metal thickness on 45-degree bends. Temper will determine the sharpness of bends. Minimum radius is 0.01562 in. Radiuses in shallow draws should be not less than metal thickness; radiuses in deep draws should be not less than double the metal thickness. A restrike die is required if sharper radiuses specified.

THREADING

The number of threads you can put in an extruded hole depends on the wall thickness of the metal, plus the depth of the extruded portion. Extruded holes normally will take 50 per cent more threads than punched ones. It is not practical to attempt a high percentage of threads in low carbon or stainless steel.

DIMENSIONAL TOLERANCES

For sheet steel and brass: Plus or minus 0.002 in. For coiled and sheet steel, copper alloys, and aluminum alloys: Inside diameter and length plus or minus 0.002 to 0.01562 in. When dimensional tolerances are specified, ask for plus or minus 0.002, 0.005, or 0.010 in., depending on the end use of the piece.

CONCENTRICITY

Specify only if necessary. Quote compound dies if concentricity is within 0.002 and 0.003 in.

SLITTING

Tolerances are specified plus or minus 0.003, 0.005 in., or 0.01562 in., depending on thickness.

BLANKING

Tolerances are specified plus or minus 0.002 or 0.010 in.

SHEARING

Tolerances are plus or minus 0.01562 or 0.0312 in. up to 0.1250 in. thick; 0.01562 in. over 0.1250 in. thick.

SURFACE CONDITIONS

The stamper accepts responsibility for the material he supplies. Parts to be used immediately are cleaned; others are not cleaned to prevent rusting. Hot rolled, scale-free steel should be specified as HRP & O (hot-rolled, pickled, and oiled).

FLATNESS

Specify minimum flatness. It usually requires additional operations.

TAPER ON DEEP DRAWN SHELLS

Depends on size, shape, and tolerances. A frequent tolerance is 0.005 in. per inch of shell height.

DRAWING COMPOUNDS

The stamper will select the type that gives the best results on the job. The buyer may state whether the compound is to be removed from the part.

TYPE OF EDGE

Specify what is required to meet product design and assembly. Establish a definite burr length in blueprints. A burr one-tenth of the metal thickness is usually allowable.

How To Cut Stamping Costs

By designing for standard practices and tolerances, you get a part that performs its function at the lowest cost. Here are some tips from Pressed Metal Institute

STAMPING has become the accepted way to make millions of parts each year, but many firms are adding to product cost because they don't know how to design for the greatest economy.

Here are some suggestions from the Pressed Metal Institute, Cleveland.

Basic Rules—Design is governed by: 1. How stamping will be used. 2. Characteristics of the metal.

The designer should know the properties of metals that can be used and understand how the metals will react when they are blanked, formed, drawn, or coined.

Watch This One—Incorrect specification is one of the most costly

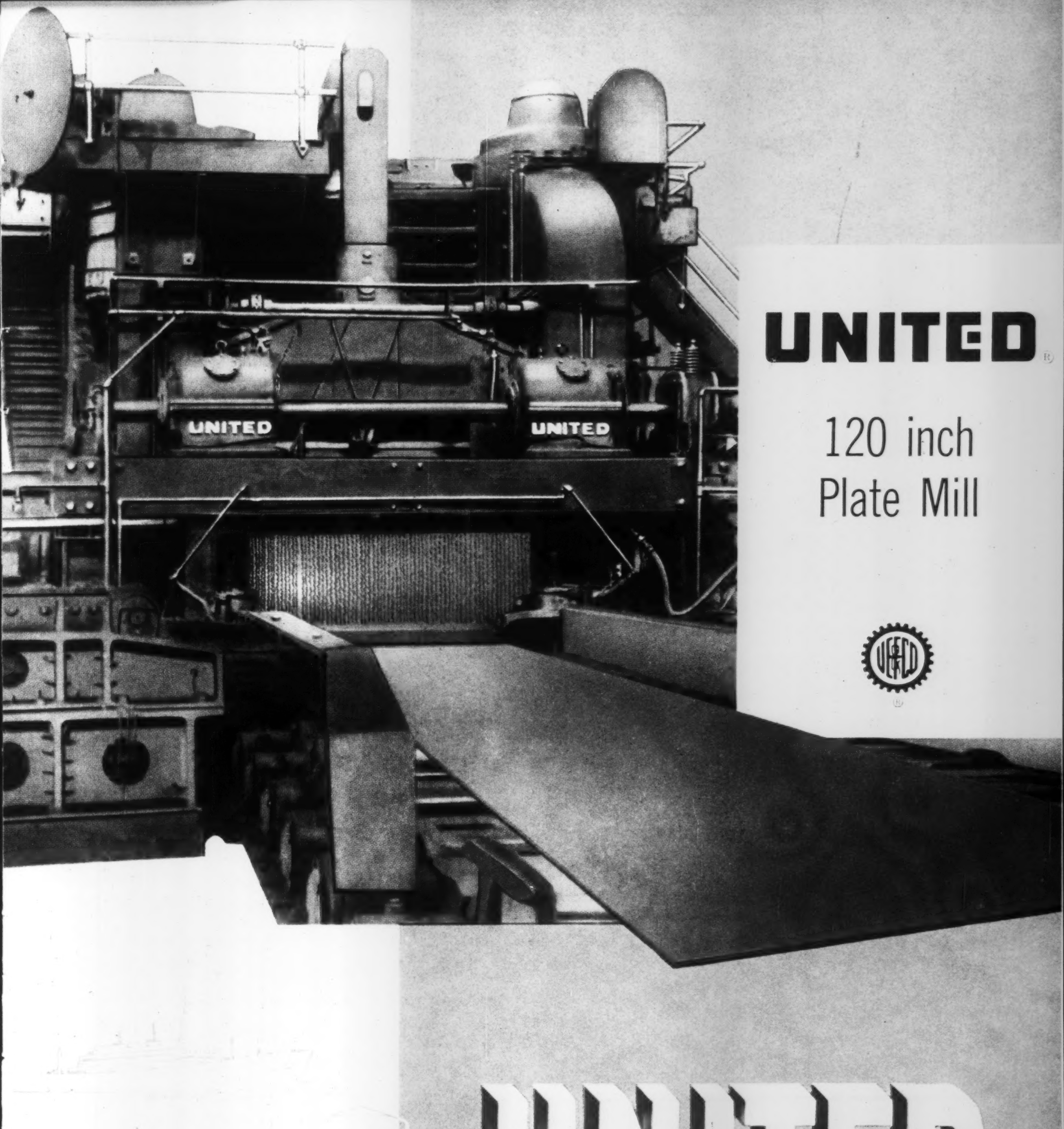


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Plate Mill

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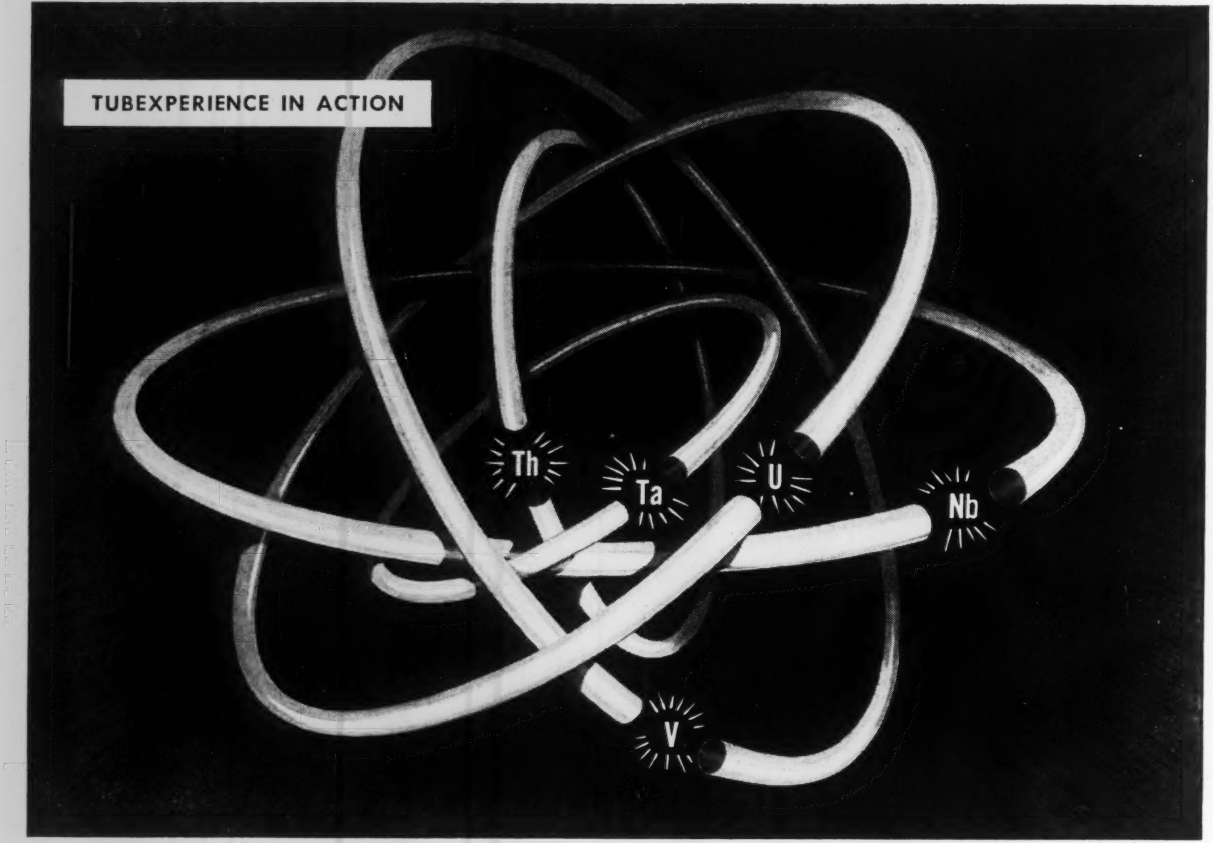

NEED TUBING FOR ATOMIC POWER?

Superior is your most reliable, experienced source

PROOF:

- *Superior has supplied millions of feet of tubing for atomic applications to many of the key manufacturers in the atomic field.*
- *Superior has already successfully manufactured tubing from uranium, vanadium, niobium, tantalum and thorium.*
- *Superior has 9 years' experience in drawing tubing from titanium and titanium alloys.*
- *Superior was the first mill to produce tubing from Zirconium, Zircaloy-2, and Zircaloy-3.*

. . . And Superior has produced all this tubing to exceptionally precise specifications and tolerances!

Put Superior's experience and facilities to work for you! Superior has drawn most of the reactive metals, as well as stainless steels, nickel alloys, ingot iron, and Inconel, for important nuclear applications.

The end uses for Superior tubing in atomic energy include control rod tubing, fuel element tubing, tubing for moderator and shielding cans, process lines for handling radioactive liquids, and tubing for handling facilities.

NOTE: In some cases, tubing can be produced only with AEC release, because of priorities on materials.

If you are in or serving the atomic industry and need small tubing, this store of experience can be of great assistance to you. For information, write Superior Tube Company, 2005 Germantown Ave., Norristown, Pa.

SEND FOR LATEST DATA ON ZIRCONIUM—*Write for your free copy of Special Analysis Memo 112—on zirconium, covering properties, fabrication and other data.*

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The big name in small tubing

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All analyses .010 in. to ⅝ in. OD—certain analyses in light walls up to 2½ in. OD

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mistakes. Frequently, a designer specifies sharp radiuses on all bends and close tolerances on all holes and slots. They add to cost. Make sure they are necessary in the design of the product.

Other Costly Practices—Distortion can change the tolerances of a precision part that is heat treated. Plan on additional operations to make the piece conform to specifications and dimensions.

Only the designer knows which dimensions are critical. If all are critical, they should be clearly designated. If only certain dimensions and hole locations are critical, they should be stated clearly.

Designers should determine the shape of hole walls on or near the radiuses of bends. The consideration becomes more important as metal thickness increases.

Correct Prints—Prints and drawings should be checked to determine if the draftsman has made the correct projection of the part. If there is any doubt, be sure to get clarification on which side of the piece should have the bend, the burr, the extruded and threaded hole, or the countersunk hole.

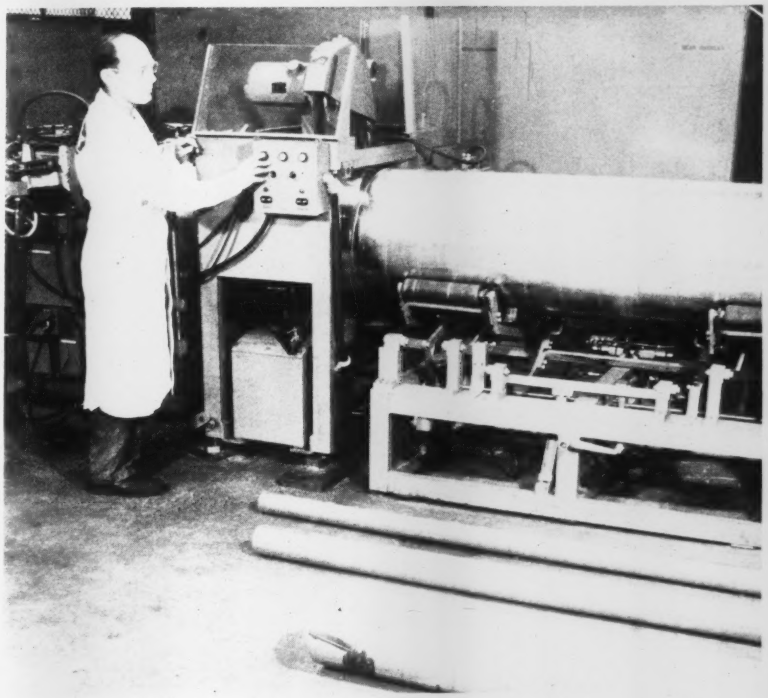
This simple error has caused many misunderstandings and expensive delays in production schedules. The part is made according to the print, but the print is incorrectly drawn.

Sample Parts—Designers occasionally supply the stamper with a handmade sample. It may resemble the finished part in size and shape, but frequently it is made of another metal.

A sample may be made of a dead soft material, but the part calls for spring steel, stainless, or beryllium copper. If specifications are not explicit, the part is apt to be made of the dead soft material.

Burrs, Flatness—Don't use the term "free from burrs" loosely. Deburring can include anything from knocking off sharp edges to a special grinding operation.

Because of the physical properties of certain metals and the shape of parts, it is sometimes impossible to obtain absolute flatness. If you specify "the part must be flat," extra operations will be required, and you will pay more to get your requested degree of flatness.



This machine winds cylindrical air conditioning ducts 3 to 24 in. in diameter from thin metal strip. Interlocked seams give increased strength

Machine Cuts Duct Costs

It winds thin steel, aluminum, or copper strip in fabrication of high pressure air conduit. Ducts are up to five times stronger than conventional conduit, engineers report

A NEW machine promises to reduce the cost of fabricating air conditioning ducts for skyscrapers by as much as 20 per cent.

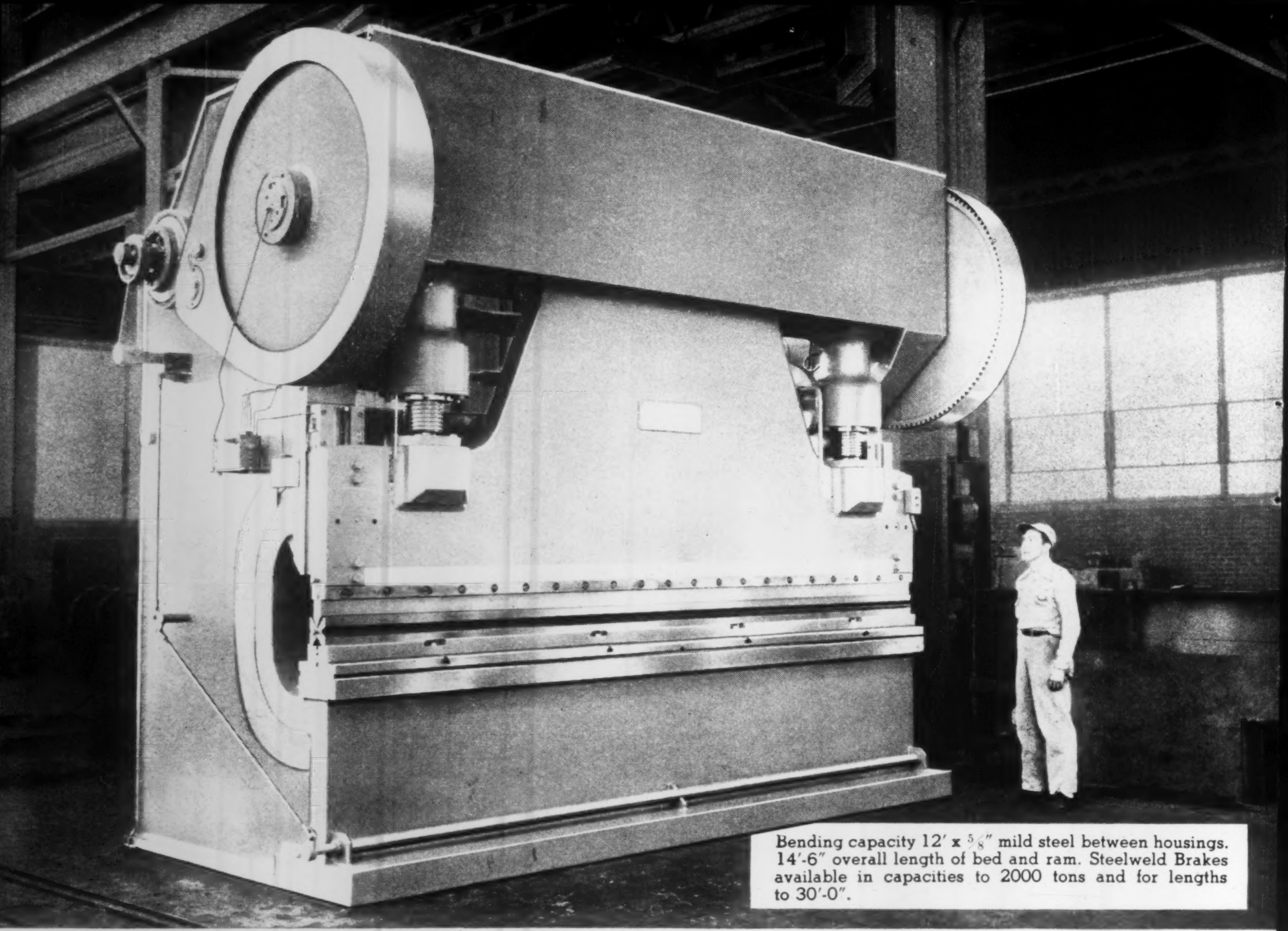
Developed by Carrier Corp., Syracuse, N. Y., the device makes cylindrical ducts from a continuous strip of thin gage metal. Joining the spirally wound stock by a series of interlocking seams increases the strength of the tubing as much as five times over that of conventional round ductwork, say Carrier engineers.

Capacity—Ducts from 3 to 24 in. in diameter can be made automatically. Zinc-coated steel, aluminum, or copper strip can be used. One man operates the machine from a small control panel. An automatic cutoff saw slices the ducts into predetermined lengths.

Setup time is reduced. Previously, it has been necessary to use two and three machines to produce a full range of sizes. The largest machine of this type is twice the size and ten times as heavy as the new Carrier design.

Ductwork — Cylindrical ducts first came into use in the 1930s with the development of a practical system for skyscraper air conditioning. High velocity air conduits occupy less space than conventional low pressure ducts. They are used today in all types of multiple story structures.

They also are suitable for mine and tunnel ventilation, dust and material collection, irrigation, and drainage lines.



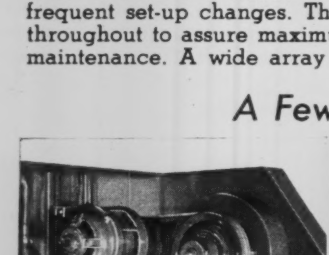
Bending capacity 12′ x ⅝″ mild steel between housings. 14′-6″ overall length of bed and ram. Steelweld Brakes available in capacities to 2000 tons and for lengths to 30′-0″.

BRAKES and SHEARS BUILT

STEELWELD machines are built to withstand the rigors of mass-production high-speed work, as well as meet the needs of jobbing shops requiring frequent set-up changes. They are liberally designed throughout to assure maximum service with minimum maintenance. A wide array of desirable features are provided, some of which are not available elsewhere.

Steelweld Brakes and Shears are easily adapted for special requirements. Our engineers will be glad to work out design changes to speed production, improve safety or bring about other advantages for specific applications.

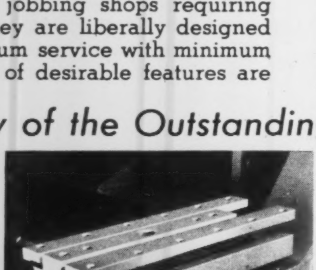
A Few of the Outstanding Press Brake Features



SW-309

Long Life Clutch and Brake

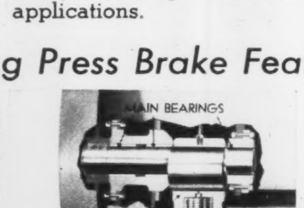
Heavy construction assures long trouble-free life. Clutch unit is duplicate of brake and parts interchangeable. Adjustments easily made without tools.



SW-458

Slides Compensate For Wear Automatically

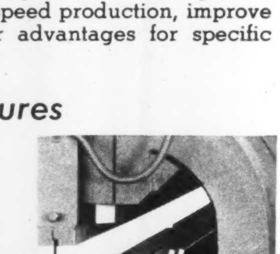
V-shaped slides and guides eliminate loose gibbing. Take up wear automatically. Easily removed and replaced.



SW-304

Six Large Main Bearings

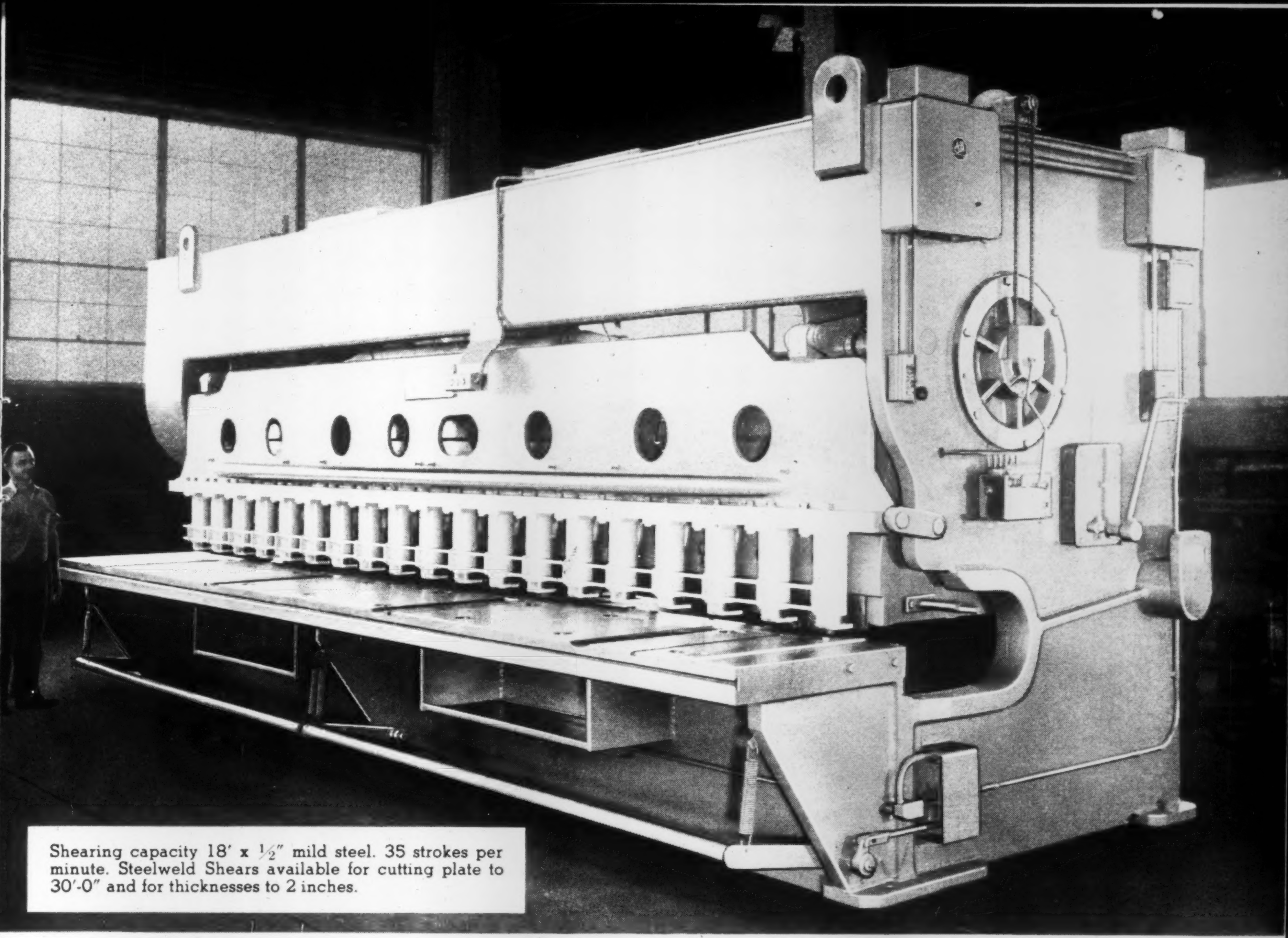
Each of the two eccentric shafts which drive the ram has three heavy bronze bearings. Ram adjustment is made by revolving nut. Screws do not turn; therefore, ball joint wear is reduced.



SW-441

Extra Deep Throat

18-inch throat is standard on all Steelweld Brakes. This permits making bends to 18 inches from edge of plate for full length of dies.



Shearing capacity 18′ x ½″ mild steel. 35 strokes per minute. Steelweld Shears available for cutting plate to 30′-0″ and for thicknesses to 2 inches.

FOR **HEAVY DUTY** SERVICE

Many Important Shear Advantages

1. Pivoted blade operation.
2. No slides or guides to wear.
3. Knife clearance easily adjusted to suit plate thickness.
4. Smooth, sharp accurate cuts.
5. Low rake.
6. Negligible twist, camber and bow in cut pieces.
7. Fast cutting and high production.
8. Easy and simple to operate.
9. Convenient electric foot control.
10. Trouble-free mechanical hold-downs.
11. Easily arranged for squaring, slitting and notching.
12. Convenient, accurate, ball-bearing mounted back gauge.
13. Quiet operating.
14. Designed for safety throughout.
15. Long knife wear between grindings.
16. Knives easily removed and replaced.
17. All-welded one-piece frame with bed integral.

STEELWELD PRESS BRAKES
STEELWELD
THE CLEVELAND CRANE & ENGINEERING CO.

GET THESE BOOKS!

Catalogs No. 2010 (Brakes) and No. 2011 (Shears) give construction and engineering details. Profusely illustrated.

THE CLEVELAND CRANE & ENGINEERING CO.
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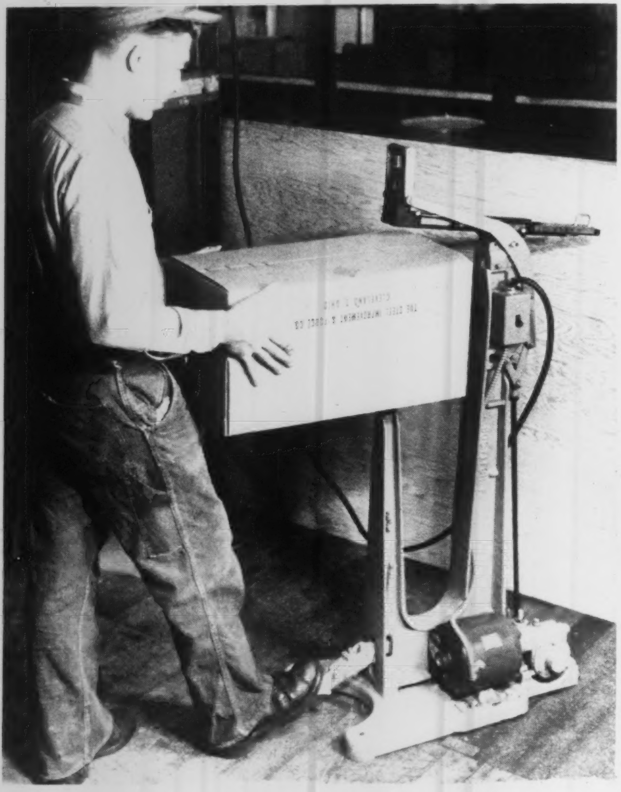
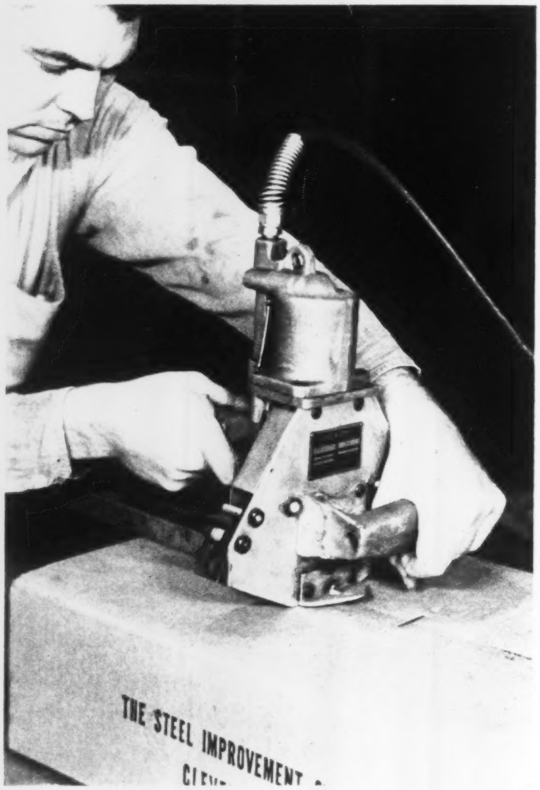
STEELWELD

BRAKES and SHEARS



Bottoming—Motorized stapler is used to make up corrugated cartons for shipping 7 to 110 lb of steel aircraft forgings



Top-Sealing—Portable, air-driven stapler seals the carton top with seven staples driven through the center seam

Staples Strengthen Corrugated Boxes

Heavy steel forgings are shipped in containers that are made up and sealed by stapling machines. The technique is faster and cleaner than tape or glue, the user says

STAPLES have replaced tape and glue in several fastening and tagging operations at Steel Improvement & Forge Co., Cleveland.

The shop makes 1 ounce to 1 ton forgings for the aircraft, automotive, transportation, and other industries. They are shipped in corrugated cartons or wooden boxes.

Company officers say that steel staples hold more firmly than tape. They also give rigidity and strength to corrugated containers.

Here are four applications:

Bottoming — A 275-lb test container is used to hold 36 lb of aircraft forgings. (The boxes are also used to ship 7 to 110 lb forgings.) The first operation is making up or bottoming the container.

A motorized, foot-operated stapler (Model F94 Bostitch) is used to place four wide-crown staples through the flaps in each bottom end of the cartons.

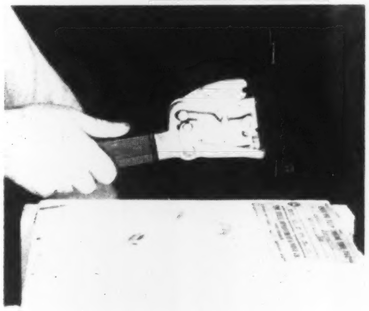
Steel Improvement & Forge says the stapler is faster, easier to operate, and cleaner to use than the tape it replaced.

Material costs have been reduced: The shop used 10 ft of tape for each box to give it necessary holding strength.

Storage space is saved. The firm pretaped the bottoms of the boxes to make them up in advance and

THE STEEL IMPROVEM

Tacking—Spring-driven stapling tacker is used to fasten shipping labels to the sealed carton



Tagging—Stapling hammer is used to fasten shipping labels to wooden boxes

stored them until loading time.

Top-Sealing—After the carton is loaded with aircraft forgings, it is top-sealed with a Bostitch (Model D13AD Boxlok) air-driven stapler. Seven staples are placed in the box tops—three on each top end and one in the middle.

The wide-crown staples are inserted across the center seam of the box top when closed, penetrating both flaps. This operation has the same advantages as bottom stapling.

Tacking—A Bostitch (Model T5-8) outward clinch, spring-drawn stapling tacker is used to fasten shipping tags. Glue and tape were used. The staples are faster, safer, more secure, and neater.

Tagging—A Bostitch (Model H2BR) stapling hammer is used to tag wooden boxes that hold various types of steel forgings. Previously, the company spot-nailed and glued the tickets to the wooden containers. Stapling is considerably faster, neater, and more secure.

Bring Users to Materials

Instead of establishing steel mills near steel user industries, the Russians are moving the mills to the ore and steel consumers to the mills, AIME section is told

EASTWARD HO is definitely the trend in Russian steel, Dennis J. Carney told the Pittsburgh section of the AIME.

Mr. Carney is superintendent of steel production, Duquesne Works, U. S. Steel Corp., Pittsburgh. He was a member of a ten-man observation team sponsored by New York University which visited Russian steel plants while a team from the Moscow Steel Institute visited plants here.

"The movement is toward new ore sources in the Urals," said Mr. Carney. "Three new ore deposits have been found in that region in the last four years. This taxes transportation facilities, so they are moving fabricating facilities (such as tractor and diesel plants) to the Urals from the Leningrad-Moscow area."

Growth — He noted less expansion in the Ukrainian steel producing area. But the Russians are systematically surveying the Urals for more iron ore, and the area also has tremendous potential sources of copper, aluminum, and titanium.

In the past seven years, they've doubled their steelmaking capacity from 25 million ingot tons to 57 million. And most of the improvement has taken place below the finishing level.

Amazing Furnaces — American visitors, including Mr. Carney, invariably are astonished by Russian ability to get 2500 tons of iron a day from blast furnaces that would produce only 1500 tons daily in this country. He added significant details to previous reports on the huge Magnitogorsk plant, which last year produced 6.6 million tons of carbon steel.

"They crush to 100 mesh and beneficiate ore of 56 per cent iron content that we would send directly to the blast furnaces," he said. "At Magnitogorsk they have an 80 per cent sinter burden and are aiming at 100 per cent.

"Most sulfur is removed in the sinter plant—all their high sulfur ores are sintered. They also have high wind rates and more moisture in the blast. Blast temperatures average 1650 to 1750° F.

"The key to their excellent blast furnace operations lies in what they do with the ore after beneficiating it. It is quickly analyzed for iron content and taken to piles smaller than any we have in our plants. After bedding, it is physically mixed by locomotive cranes so that any part of the pile won't vary in iron content by more than plus or minus 1 per cent."

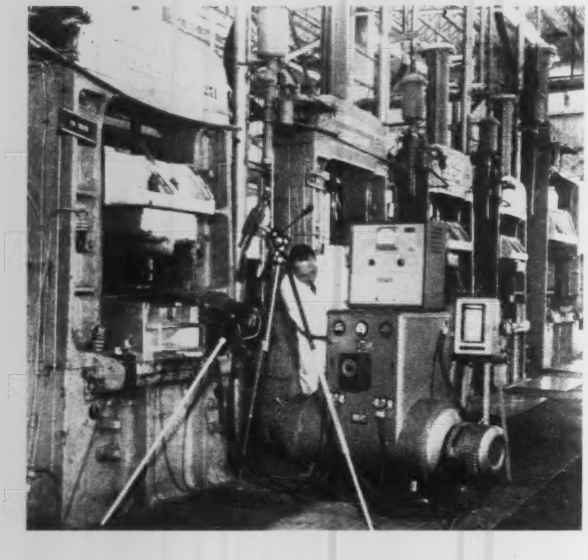
Hot Sinter—After mixing, the ore goes to 13 Dwight-Lloyd sintering machines (next year they will have 16). Mr. Carney noted one big difference in sintering practice: "The Russians have no cooling on their sinter strands. They feed hot sinter off the belt into railroad cars." The sinter goes directly to a blast furnace charging bin, and over 40 per cent of it goes into the furnaces at a temperature over 750° F.

Coke gets almost the same careful handling as sinter. Russian coke is harder. It is also larger than what we use. Minimum size is 1 in., and it's usually 5 in. long and 2 in. in diameter, Mr. Carney estimates.

Steelmaking — He found open hearth production not far ahead of ours—35 tons per hour in big heat furnaces. He noted that the Russians have much more equipment on the hearths and charge 62 per cent hot metal.

He found the finishing mills the slowest part of Russian steel industry but noted that gains are being made. All workers, including the plant manager, are on incentive systems; incentives may average as much as a man's wages.

Infrared Controls Heating of Titanium



Sheet of titanium is resistance heated in bed of drop hammer. Pyrometer is on tripod, chart recorder is at right

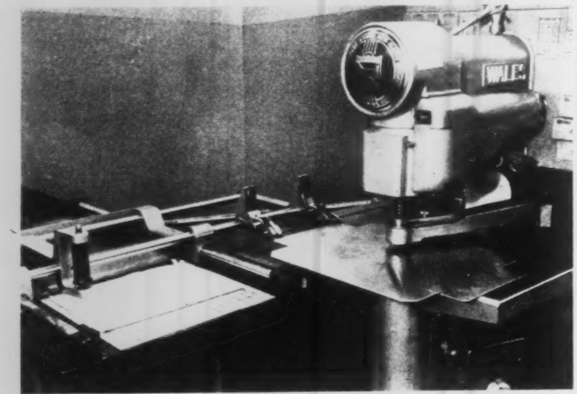
AN infrared pyrometer plays a key role in a new hot forming process for titanium developed by Republic Aviation Corp., Farmingdale, N. Y. The forming temperature of titanium is critical; too much deviation in temperatures lowers the quality of the metal.

The easiest way for Republic to heat the metal is by the resistance method. It eliminates the need for large furnaces, saving floor space as well as time. Sheets of titanium are heated to forming temperature in a few seconds while they rest in the bed of the drop hammers (see photo at left).

Resistance heating, however, creates difficulties in temperature monitoring and control. The infrared pyrometer takes care of those requirements. Mounted on a tripod in front of the hammer, the pyrometer measures heat by responding to the infrared radiation from the titanium sheet. The instrument is made by Servo Corp. of America, New Hyde Park, N. Y., whose engineers say it is sensitive enough to detect the heat from a man's finger at a distance of 200 yards under laboratory conditions.

A chart recorder provides a permanent record of forming temperatures for checking by the quality control department.

Grid Layout Cuts Hole Punching Time



Martin-designed grid layout table and tracer control unit eliminates need for template in punching chassis holes

A GRID layout table and tracer control, installed on a Wales semiautomatic hole punching fabricator, enables Martin Co., Baltimore, to make test tool chassis directly from a blueprint.

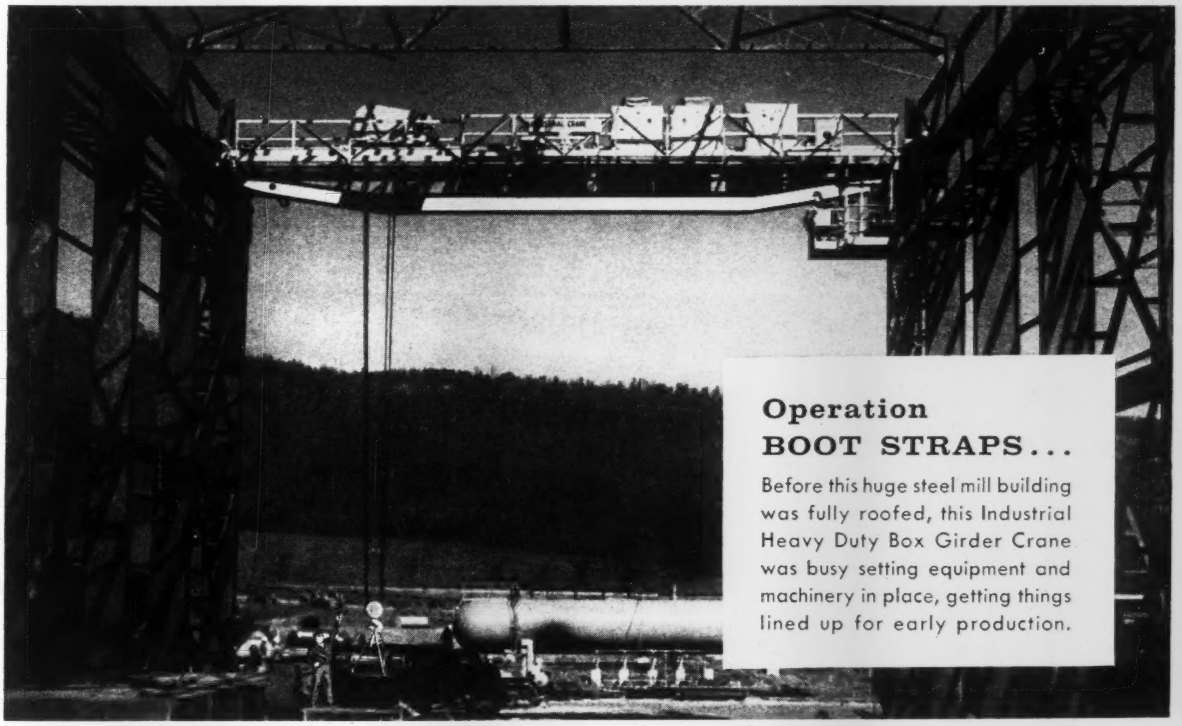
As designed, the fabricator worked from a template clamped on the press bed. The punch was manually set on the proper hole location, punched and then moved to the next setting. It was quicker than drilling, but limited. To obtain optimum results, a series of chassis with identical patterns had to be punched. Since two test tool chassis with like patterns are not often needed, the template became a disadvantage. With each new chassis, a new template had to be made.

Martin designed a grid layout table and tracer control unit so the punch could be located directly from a blueprint. Dies, ranging in diameter from 3/32 to 3½ in., are used to punch holes for terminal and resistor boards and other parts.

An actual-size blueprint is taped on the 30 x 40 in. grid layout table. The blueprint and chassis sheet are positioned by the centering hole. The tracer is set on the print in the hole location, the control lever depressed, and the hole is punched in the sheet metal clamped to the control arm on the press bed. The tracer control is then moved to the next location and the process repeated.

Since the blueprint is drawn to the exact size of the chassis sheet, the pantograph arm works on a 1:1 ratio, although it can be varied. A special die is used to notch the corners of the chassis. Future punches will enable the fabricator to punch slots and holes that are square, oblong, and keyway shaped.

Think of Industrial First!



Operation BOOT STRAPS...

Before this huge steel mill building was fully roofed, this Industrial Heavy Duty Box Girder Crane was busy setting equipment and machinery in place, getting things lined up for early production.

Industrial
Heavy-Duty
Box Girder Crane

Another in the versatile Industrial line

- Heavy duty MCB bearings on end trucks and trolley
- Precision machined components
- All welded box girders with built-in camber
- Wide choice of electrical controls
- Rolled forged steel bridge and trolley wheels
- Open or closed full vision operator's cab
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In planning your new building specify

Industrial

HEAVY DUTY CRANES

When designs for new plants are in the formulative stages it is wise to call *Industrial* Crane Engineers and reap the benefit of their experience and careful attention to details in planning the overhead crane systems.

Greater economy can be effected by designing an efficient handling system that fits your needs into the original structure rather than adapting an operation to the structure afterwards.

Be sure to specify *Industrial* heavy duty cranes. You'll enjoy the benefits of economical crane performance because *Industrial* cranes combine rugged dependability with ease of maintenance.

Industrial cranes are today's best values

Industrial makes many other types of Overhead Traveling Cranes and Jib Cranes to fill any materials handling need. Write for information and catalogs.

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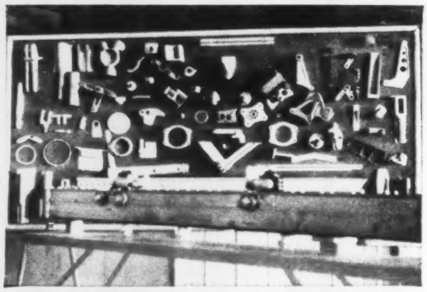
Export Sales: Borg-Warner International, 36 South Wabash Ave., Chicago 3, Illinois

Aerocycle, a one-man helicopter now being tested by the U. S. Army, is one of the many aircraft for which Aeroaffiliates machines precision parts.

Some Examples of Aeroaffiliates' Work. ▶ All require fine tolerances and excellent finish. All were made with the help of Cities Service Chillo Cutting Oils.



"Fine Tolerances! Excellent Tool Life! With Cities Service Chillo Cutting Oil"

In probably no other machining operation are the tolerances so fine, the requirements so demanding as in aircraft work . . . especially when it's for the U. S. Army or Air Force.

But it is on such work that Aeroaffiliates, Inc. of Fort Worth, Texas, has become famous.

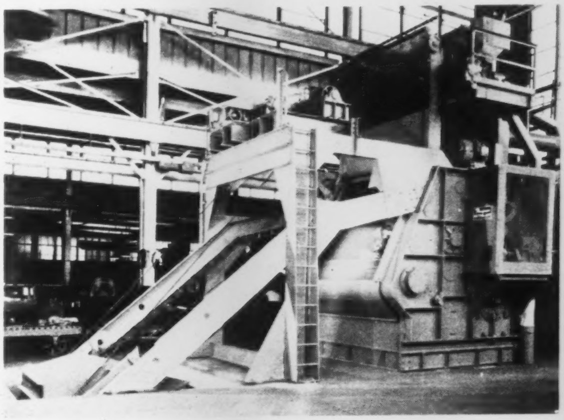
Every day, Aeroaffiliates employees must work with tolerances as fine as .0001, and their products must have an unusually good finish . . . so good that they are measured by a special gauge before the aircraft industry will accept them.

Obviously, this could play havoc with tool life . . . "but thanks to Cities Service Chillo Cutting Oils, tool life and finish are the best ever," says Aeroaffiliates. "These cutting oils are equalled only by the help we receive from the Cities Service Lubrication Engineer, a man whose knowledge and help we greatly value."

Whatever *your* type of machining operation, there's a Cities Service cutting oil tailored precisely for it . . . and a Cities Service Lubrication Engineer to help you choose it. Call him in this week. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

CITIES SERVICE
QUALITY PETROLEUM PRODUCTS

Blasting Machine Cleans 6 Tons of Parts in 5 Minutes



The 72 Type GN Rotoblast barrel has a capacity of 72 cu ft. It's designed for foundries, forge shops, heat treating plants, and other metalworking plants that clean and descale large volumes of heavy parts.

Two wheels, each powered by a 40-hp motor, can throw a total of 240,000 lb of abrasive an hour.

All operations of the machine, including loading, starting, stopping, and unloading, are governed from a convenient control panel.

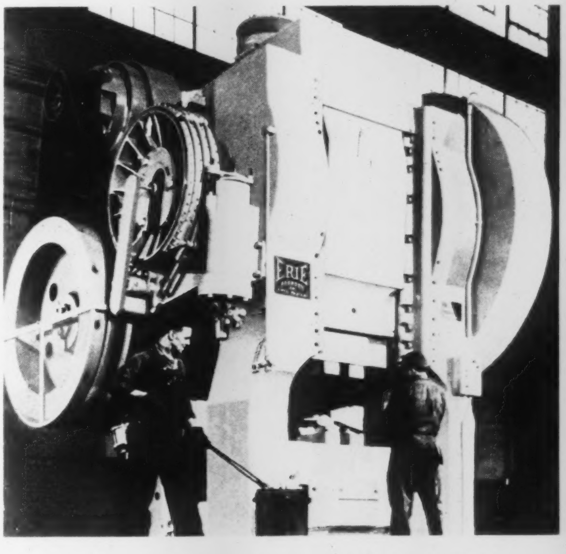
A heavy apron work conveyor enables the machine to handle individual castings weighing more than 1 ton. The slats are 1½ in. thick and made of rolled steel. Welded stiffening members form an H-section for top strength. Two supporting chains are used. Connecting links of the conveyor are made of hardened cast steel. Integral stiffening members prevent slat distortion.

The abrasivetight door is made of solid plate. The wheel housings and the blast chamber are lined with replaceable alloy plates. Drum ends are manganese steel.

A cleaning and recleaning system removes all sand and debris during operation to maintain full abrasive efficiency. Scale, dust, and broken-down abrasives are removed before the abrasive is returned to the wheel for re-use.

The barrel is 21 ft 5 in. wide, 10 ft 11 in. deep, and 23 ft high. *Write*: Pangborn Corp., Hagerstown, Md. *Phone*: Hagerstown 3500

Mechanical Forging Press Is Easy To Operate and Maintain



Specifications found desirable as the result of a one-year field research program are incorporated in this 2500-ton model press.

Ram guiding has been improved by auxiliary guides at the bottom of the stroke.

The front columns have been spread and the working area moved forward to give operators 8 in. more clearance for manipulating work in and out of the die. The operator can move close to the die, use short tongs, and have good visibility.

The press is 11 ft 3 in. high—3 ft less than contemporary machines. This is achieved by a Scotch yoke, a sliding block which transmits pressure from the eccentric shaft to the ram. The yoke also provides a large bearing area, increases the rigidity of the press, and eliminates the use of the pitman and ram pin.

Circulating flood lubrication is provided for the main bearings. The Scotch yoke is operated in an oil bath.

The herringbone design of the main gear and pinion makes them strong and silent in operation. They are made of heat treated alloy steel.

The two-plate clutch is air operated and mounted on the main shaft, within the main gear. Bearings are mounted behind the clutch plate.

Cover, piston, and springs can be removed as a unit, making it easy to inspect the clutch lining.

The cast steel brake band is bolted in. It is hinged and reversible. The brake can be adjusted from the floor. *Write*: Erie Foundry Co., Erie, Pa. *Phone*: 2-6754

Gas Analyzer

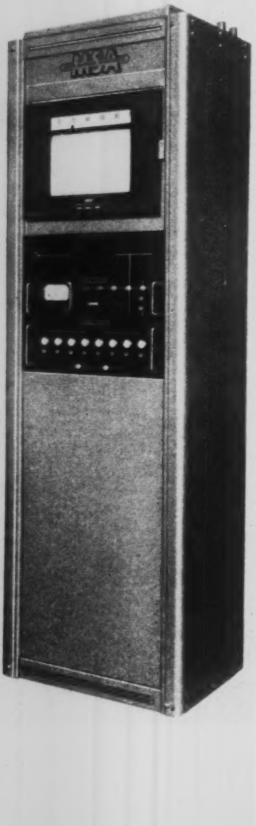
Model F provides flexible, centralized instrumentation for process control and industrial safety by continuous or intermittent sampling and measurement of combustible gases and vapors in mixtures with air at normal or high temperatures.

The electrically heated sensing element of the instrument is a long-life filament. A remote analyzing head operates at high temperatures and analyzes hot samples in the area of their occurrence without danger of condensation of combustible vapors. The housing is explosionproof.

Three basic systems provide continuous tube sampling of up to six stations, continuous remote head sampling of up to six stations, or intermittent tube sampling of a maximum of eight stations.

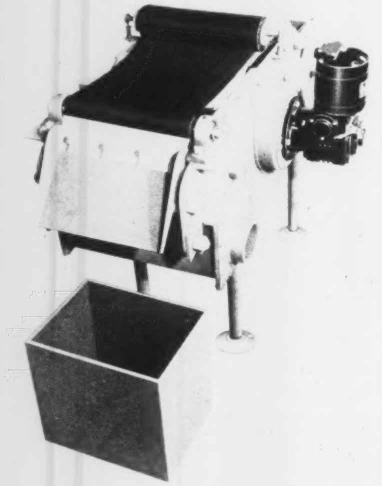
Monitor units are used in all systems, one for each sample station or each group of intermittently sampled stations.

A station selector unit scans sampling stations automatically in timed sequence. Sample time per station is 30 seconds. Pushbutton control permits continuous sampling of one station. *Write*: Mine Safety Appliance Co., 201 N. Braddock Ave., Pittsburgh 8, Pa. *Phone*: Churchill 1-5900



Coolant Cleaner

Metallic and nonmetallic solids are removed from coolants by this system through a combination of magnetic and mechanical separation.



Rotating a magnetic drum on an adjustable time cycle causes a magnetized brush to form. The brush acts as a filter.

In one model, a scraper blade removes solids from the magnetic drum. The other model uses a conveyor system to remove solids and deliver them to the point of disposal.

In both, the swarf passes through a squeeze roller to remove trapped liquid so that dry material is discharged into the disposal receptacle.

Capacities of the magnetic separators range up to 150 gpm. *Write*: Infilco Inc., P. O. Box 5033, Tucson, Ariz. *Phone*: Main 3-5401

Honeycomb Adhesives

This series of heat curing composite film adhesives provides a high combination of peel and beam shear strength. They are used in the fabrication of bonded primary airframes and missile structures.

The supported composite adhesive films consist of a high strength elastomeric adhesive film on one surface and a self-filleting adhesive film on the other.

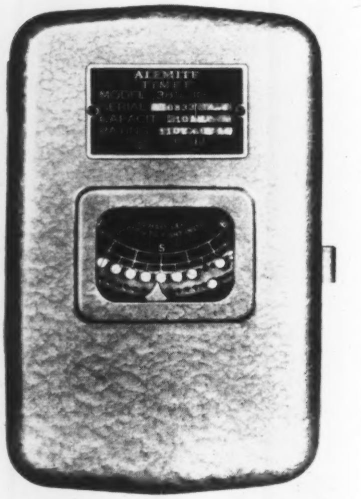
The elastomeric adhesive bonds to the facing and the self-filleting adhesive bonds to the core of the honeycomb sandwich. *Write*: Adhesives, Coatings & Sealers Div., Minnesota Mining & Mfg. Co., 423 Piquette Ave., Detroit 2, Mich. *Phone*: Trinity 5-7111

Lubrication System

Accumite is a low pressure, positive displacement system for lubricating machine tools and packaging, canning, labeling, textile, and similar machines which have numerous bearings and limited installation space.

The heart of the system is a miniature metering valve (slightly larger than a lubrication fitting) which services bearings individually. It delivers a specified amount of lubricant to each bearing regardless of its clearance or distance from the pump. Lubricant does not drain from the system when the machine is idle.

A wide range of light grade lubricants can be handled.



Four types of pumps are used to pressurize the lines and actuate the measuring valves. Enough lubricant can be delivered in one stroke to serve 40 to 200 bearings. *Write*: Alemite Div., Stewart-Warner Corp., 1826 Diversey Parkway, Chicago 14, Ill. *Phone*: Lakeview 5-6000

(Please turn to Page 136*)*

On Norton diamond wheels ...this mark is

Your CERTIFIED Buying Guide

D150-T(100)-1/8

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DIAMOND WHEELS

W-1836

On this Norton diamond wheel we have highlighted the mark indicating diamond concentration — in this case, 100.

What is the exact meaning of the Norton 100 mark?

It means that each Norton 100 concentration diamond wheel contains an amount of diamond in carats calculated to a formula of 72 carats per cubic inch. Wheels of 75, 50 and 25 concentration of diamond contain 75%, 50% and 25% of this 100 concentration standard, respectively.

The finished wheel contains the calculated number of carats of diamond except for the slight loss resulting from truing the diamond section to place the wheel in proper truth and condition for grinding.

With each wheel you get a certificate assuring the complete dependability of its concentration mark, signed by the President of this Company.

The Norton certified mark is your safest possible buying guide. It assures the top performance and long wheel life that you're paying for.

And remember:

Besides duplicating wheel specifications with constantly controlled accuracy, Norton was first to introduce all three types of diamond wheels — metal, resinoid and vitrified bonded . . . does all its own sizing, grading and laboratory checking of diamond bort . . . brings you a complete line, covering every diamond wheel application . . . gives you fast service from full stocks.

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for the diamond wheels you need. Or write to NORTON COMPANY, General Offices, Worcester 6, Mass. Plants and distributors around the world.

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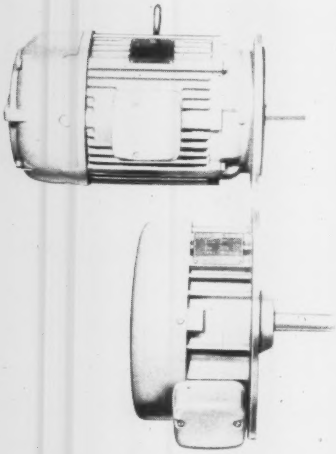
405 LEXINGTON AVE., NEW YORK, N. Y.

NEW PRODUCTS and equipment

Motor Is Short

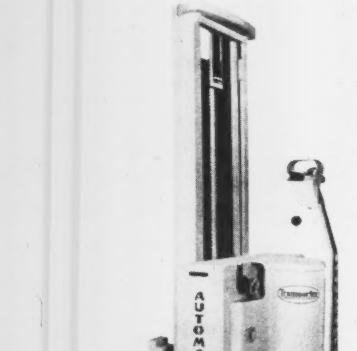
The Pancake motor is flanged and has a conventional radial air gap. Its short length, without reduction in performance, is achieved through formed end coils and a one piece housing-bearing bracket.



The motor is available in 1 to 15 hp ratings at 1800, 1200, and 900 rpm with open dripproof enclosures or enclosed construction. *Write*: Dept. P, Louis Allis Co., 427 E. Stewart St., Milwaukee 1, Wis. *Phone*: Humboldt 1-6000

Pallet Stacker

Model WAT is an electric-powered straddle walkie unit that lifts up to 130 in. with standard uprights of 83 in. Capacities of 4000 and 6000 lb are available. The 4000-lb capacity model has telescopic uprights.



The truck has a welded unit frame and nested uprights. *Write*: Automatic Transportation Co., division of Yale & Towne Mfg. Co., 149 W. 87th St., Chicago 20, Ill. *Phone*: Radcliffe 3-7000

Roll Marker

Model 490 is a high speed machine that roll marks gradually under a low pressure with multiple passes of a roll die.

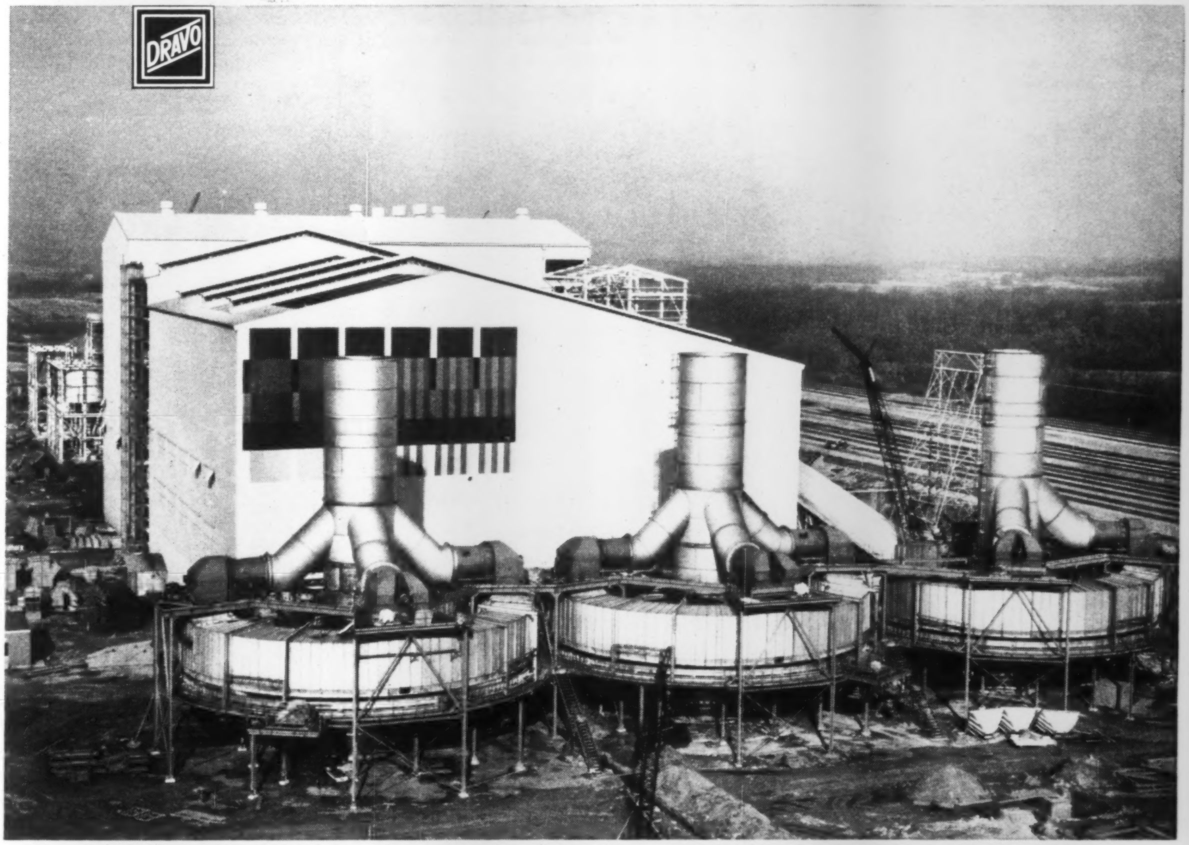
The die slide reciprocates continuously, about 400 strokes a minute. After each index of the worktable, the table slide of the machine elevates to bring the work into contact with the roll die. Pressure (preset by a regulator) is applied. After a specific number of roll passes, the table slide drops and the worktable again indexes.

Depth of mark is achieved by varying marking pressure and number of marking strokes. *Write*: Noble & Westbrook Mfg. Co., East Hartford, Conn. *Phone*: Butler 9-2717

Exhaust Fans

This series of belt-driven fans comes in 18, 24, 34, and 42 in. diameters. Static pressures from 1/4 to 1 1/4 in. are provided.

Air volumes range up to 28,375



At Saxonburg, Pa., Dravo is constructing a sintering plant for U.S. Steel Corporation that will produce 15,000 tons of iron ore sinter per day.

Dravo builds country's largest sintering plants for U. S. Steel

To increase efficiency of blast furnace operations by better utilization of iron ore fines, United States Steel Corporation is building two giant sintering plants—one at Gary Steel Works, Gary, Indiana; the other at Saxonburg, Pa., north of Pittsburgh, to be operated by Edgar Thomson Works.

As exclusive U.S. licensee of the Lurgi Company (Europe's foremost producer of such equipment) Dravo is handling design—and fabrication and erection of mechanical equipment—for both installations. Each includes three sintering machines and three coolers. American Bridge Division of U.S. Steel is handling fabrication and erection of the buildings.

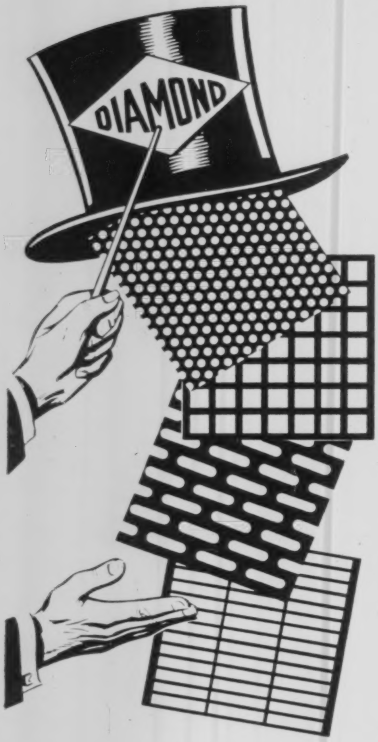
The U.S. Steel and other sintering projects currently under contract at Dravo underscore the growing importance of this process to the steel industry. For information on products and services listed below, write DRAVO CORPORATION, PITTSBURGH 25, PA.

DRAVO
CORPORATION

Blast furnace blowers · boiler & power plants · bridge sub-structures · cab conditioners · docks & unloaders · dredging · fabricated piping

foundations · gantry & floating cranes · gas & oil pumping stations · locks and dams · ore & coal bridges · process equipment · pumphouses & intakes

river sand and gravel · sintering plants · slopes, shafts, tunnels · space heaters · steel grating · towboats, barges, river transportation



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The popular Diamond Perforated-metal patterns shown above are only a few of the many illustrated and described in our 32-page Catalog No. 39. All of these standard patterns are available in a wide range of unit-opening sizes and we are always equally pleased to quote on original designs of any type or size.

Catalog 39 also illustrates and describes our high-quality lines of *Ornamental Cane*, Perforated-Metal Sheets for Accoustical installations and Heavy-Duty Architectural Grilles. Write, today, for a free copy.

Correspondence is especially invited regarding ANY requirement for perforated-metal panels or parts. We are equipped to fabricate special sections to any desired extent and welcome opportunities to make money-saving suggestions.

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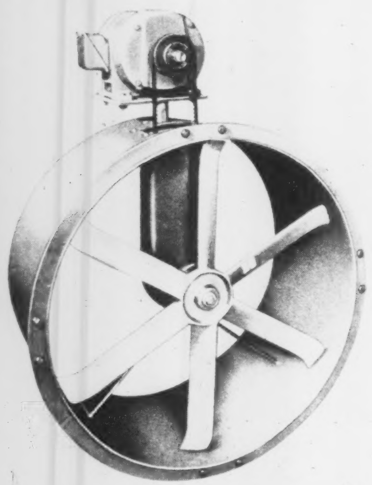
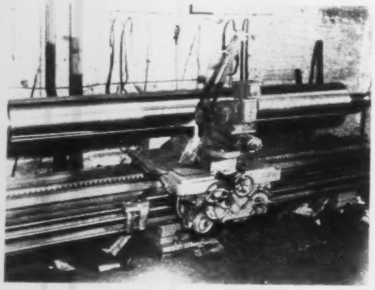


cfm (based on an average motor speed of 1725 rpm).

Fan blades are made of aluminum. *Write*: Binks Mfg. Co., 3122 Carroll Ave., Chicago 12, Ill. *Phone*: Van Buren 6-4200

Roll Grinding

Metal rolls (steel, cast iron, brass, aluminum, and stainless steel) are ground with abrasive belts and roll grinding attachments.



The exacting tolerances specified for straight or crowned rolls (regular or special) are held. *Write*: Dept. R.G., Carborundum Co., Box 477, Niagara Falls, N. Y. *Phone*: 6631

Gear Loader

This automatic loader can be ordered as original machine equipment or as an addition to the 870 series of rotary gear finishing machines. It makes loading, shaving, and unloading automatic.

The loader can be equipped with

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CRANES
and
HOISTS

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See "NORTHERN"

"NORTHERN" — the name you see on overhead electric cranes in industrial plants of all kinds wherever you may be, because NORTHERN — since 1899 — has been a leader in industrial crane design and construction.

The name "NORTHERN" represents faithful adherence to uncompromising design, quality controlled machining, and closely inspected fabrication. "NORTHERN" Cranes and Hoists have an extra margin of safety — give dependable, fast service under the most rugged, emergency conditions — are notable for fine, standard-type electrical equipment and controls for precise manipulation and quick, easy maintenance with minimum downtime.

Let us send you Crane Bulletin SE-108-A
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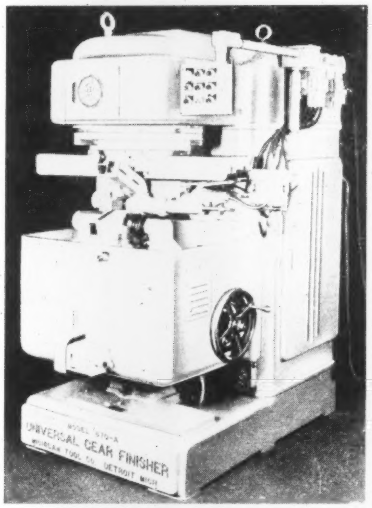
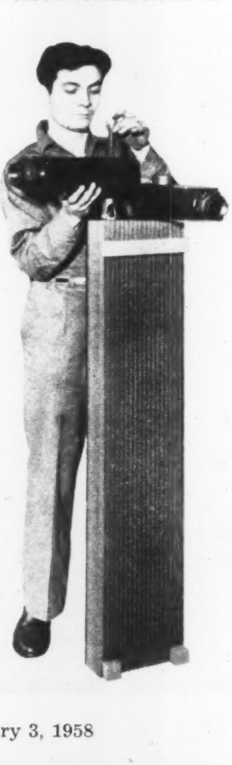


gaging gears to prevent oversize parts from entering the loading shuttle. *Write*: Michigan Tool Co., 7171 E. McNichols Rd., Detroit 12, Mich. *Phone*: Twinbrook 1-3111

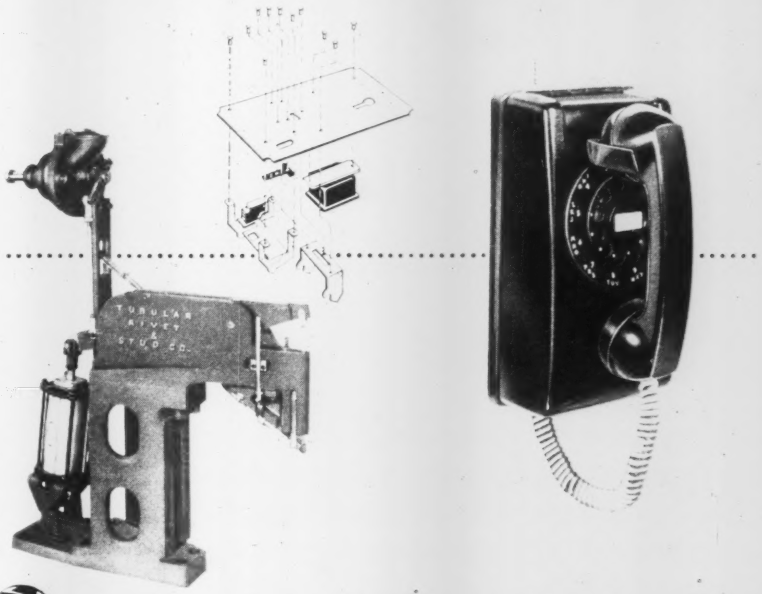
Heat Exchanger

Karbate VHUS is a plate heater made of impervious graphite. It has an adjustable and removable elbow connection which provides complete flexibility in installation.

The elbow connection is bolted



SPEEDS FASTENING BY 60%



Tubular's RIVETS AND RIVETERS HELP *Western Electric**

Maximum Efficiency Requires Flexibility

A substantial reduction in the cost of assembling components of the wall-phone base-plate resulted when engineers from Western Electric's Indianapolis Works and ***Tubular*** solved a fastening problem — they developed a Multi-Head Riveter assembly consisting of 11 automatic, air-operated machines. A bank of 5 riveters was joined to a 6-machine bank by a bridge with a rolling fixture. This method replaced the preliminary fastening plan which was based on 40 operations, 2 machines and 2 operators. The new Multi-Head assembly reduced estimated fastening labor costs about 35%. When production requirements increased tremendously, an additional nominal investment modified the bridge and added a second rolling fixture. Two operators were then easily able to boost the production rate an additional 60%.

*WESTERN ELECTRIC

Western Electric, manufacturing and supply unit for the Bell System, produces telephones, wire and cable, switching systems; and in addition, makes important contributions to defense projects such as DEW Line and Nike Guided Missile Systems.

TUBULAR of Quincy

If assembly speed is an important factor in your own cost picture, take the time right now to learn how ***Tubular's*** Rivets and Automatic Riveting Machines may help you. ***Tubular's*** Riveters can feed and set one, or as many as 12 different rivets on different planes at one time. Call our nearest office or send us your blueprint, at no obligation, for complete information and technical help.

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& STUD COMPANY
WOLLASTON (QUINCY) 70, MASS.

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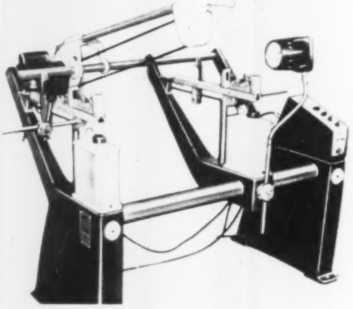
See your local classified directory for phone numbers

and can be swiveled to any angle. It can be replaced in the field if it should become damaged in service. *Write*: National Carbon Co., 30 E. 42nd St., New York 17, N. Y. *Phone*: Murray Hill 7-8000

Electronic Balancer

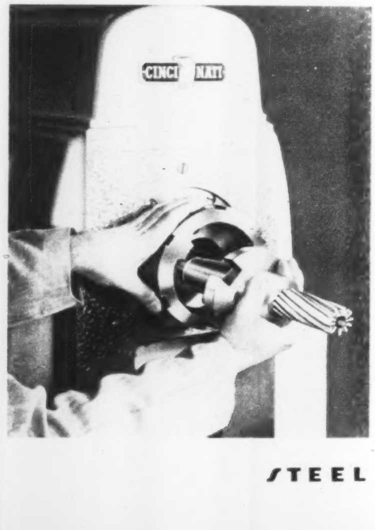
Model 702 can balance to 0.004 in. oz all rotating parts weighing between $\frac{1}{4}$ and 300 lb with diameters from $\frac{1}{4}$ to 30 in.



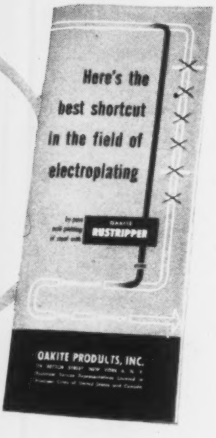
No special fixtures are needed and setup takes less than 2 minutes. Trunnion bearings are automatically aligned by springs in flexure. *Write*: Alemite Div., Stewart-Warner Corp., 1826 Diversey Parkway, Chicago 14, Ill. *Phone*: Lakeview 5-6000

Spindle Nose

Arbor-Loc is a spindle nose for knee-and-column milling machines that makes it easy to change arbors quickly. It has the same dimensions and basic design of the



Platers find many uses for chelating*cleaner



*Chelating (pronounced key-lating) cleaners convert metallic salts and oxides into compounds soluble in water.

By chelating and removing rust or heat scale at the same time that it removes oil, Oakite Rustripper combines pickling and alkaline cleaning into one operation. It also avoids disadvantages of acid pickling, such as hydrogen embrittlement and etching of machined surfaces.

Platers now use Rustripper for dozens of difficult steel-cleaning jobs. Here are some examples reported in recent weeks:

CALIFORNIA: "Rustripper has ended pickling damage such as embrittlement." (Removing oil and light rust from machined landing gears before cadmium plating.)

NEW YORK: "Now saving about $10.40 per day on removing rust and scale and producing brighter plate." (Rustripper, added to reverse current cleaner in automatic plating machine, has eliminated separate pickling of wire towel racks before nickel and chrome plating.)

INDIANA: "Rustripper is the best barrel compound we ever used for this job." (Removing tough heat treat scale from steel screws.) "Total cleaning and zinc plating time has been cut in half."

NEW JERSEY: "Only two cleaning rejects in first 15,000 parts plated." (After Rustripper was added to reverse current cleaner in automatic plater to eliminate smut from tubular steel furniture.)

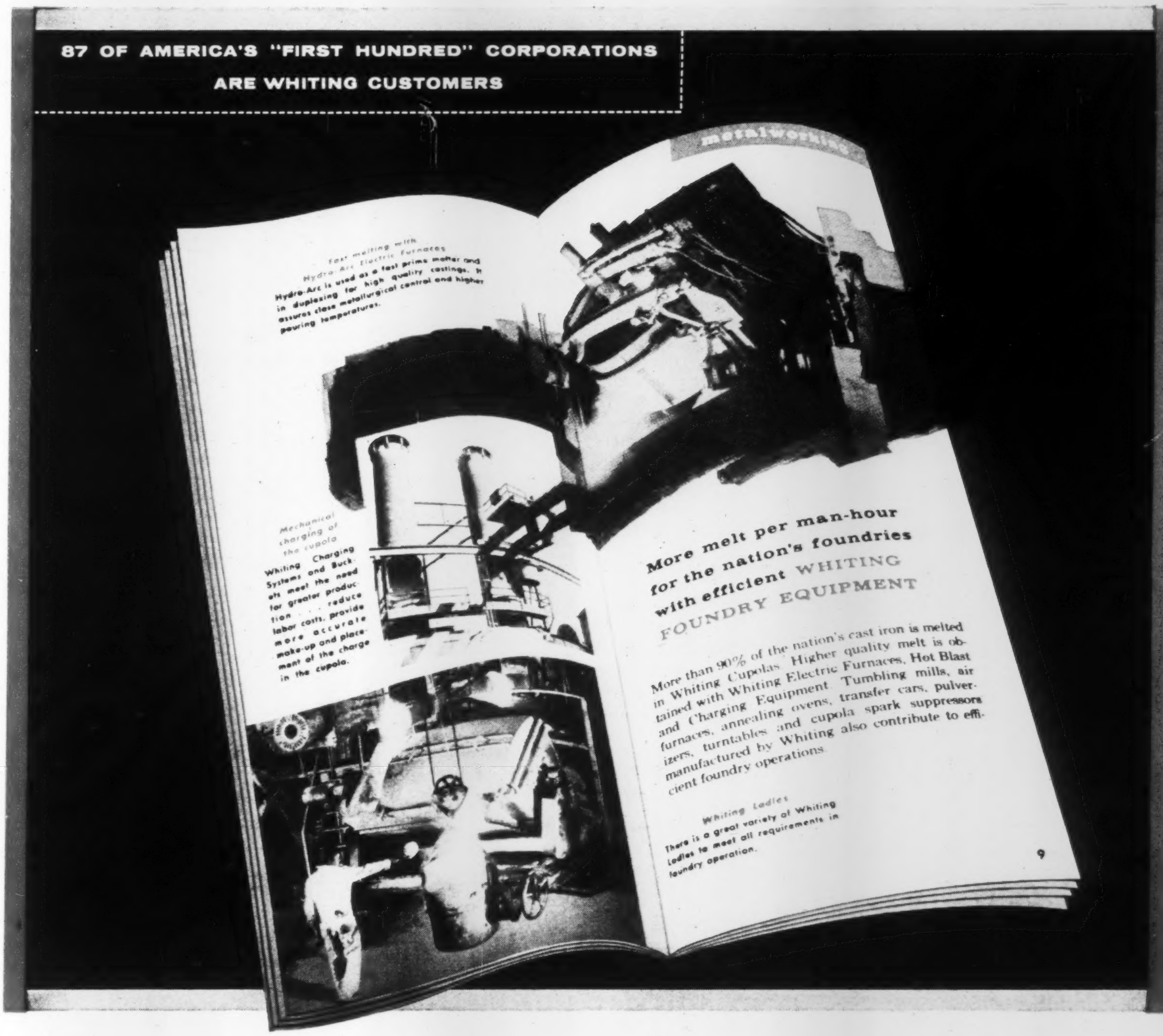
NEW YORK: "Had trouble with light rust on business machine parts before cadmium plating; also with smut left after electrocleaning. Rustripper cured both troubles."

FREE A 14-page illustrated booklet called "*Here's the best shortcut in the field of electroplating*" tells about many ways in which Oakite Rustripper can be of great value in the plating shop. Write to Oakite Products, Inc., 34E Rector St., New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE®
MATERIALS · METHODS · SERVICE
SCIENCE

Technical Service Representatives in Principal Cities of U. S. and Canada
Export Division Cable Address: Oakite

87 OF AMERICA'S "FIRST HUNDRED" CORPORATIONS ARE WHITING CUSTOMERS



metalworking

Fast melting with Hydro-Arc Electric Furnaces

Hydro-Arc is used as a fast prime melter and in duplexing for high quality castings. It assures close metallurgical control and higher pouring temperatures.

Mechanical charging of the cupola

Whiting Charging Systems and Buckets meet the need for greater production . . . reduce labor costs, provide more accurate make-up and placement of the charge in the cupola.

More melt per man-hour for the nation's foundries with efficient WHITING FOUNDRY EQUIPMENT

More than 90% of the nation's cast iron is melted in Whiting Cupolas. Higher quality melt is obtained with Whiting Electric Furnaces, Hot Blast and Charging Equipment. Tumbling mills, air furnaces, annealing ovens, transfer cars, pulverizers, turntables and cupola spark suppressors manufactured by Whiting also contribute to efficient foundry operations.

Whiting Ladles

There is a great variety of Whiting Ladles to meet all requirements in foundry operation.

9

Looking for new ways to cut costs?

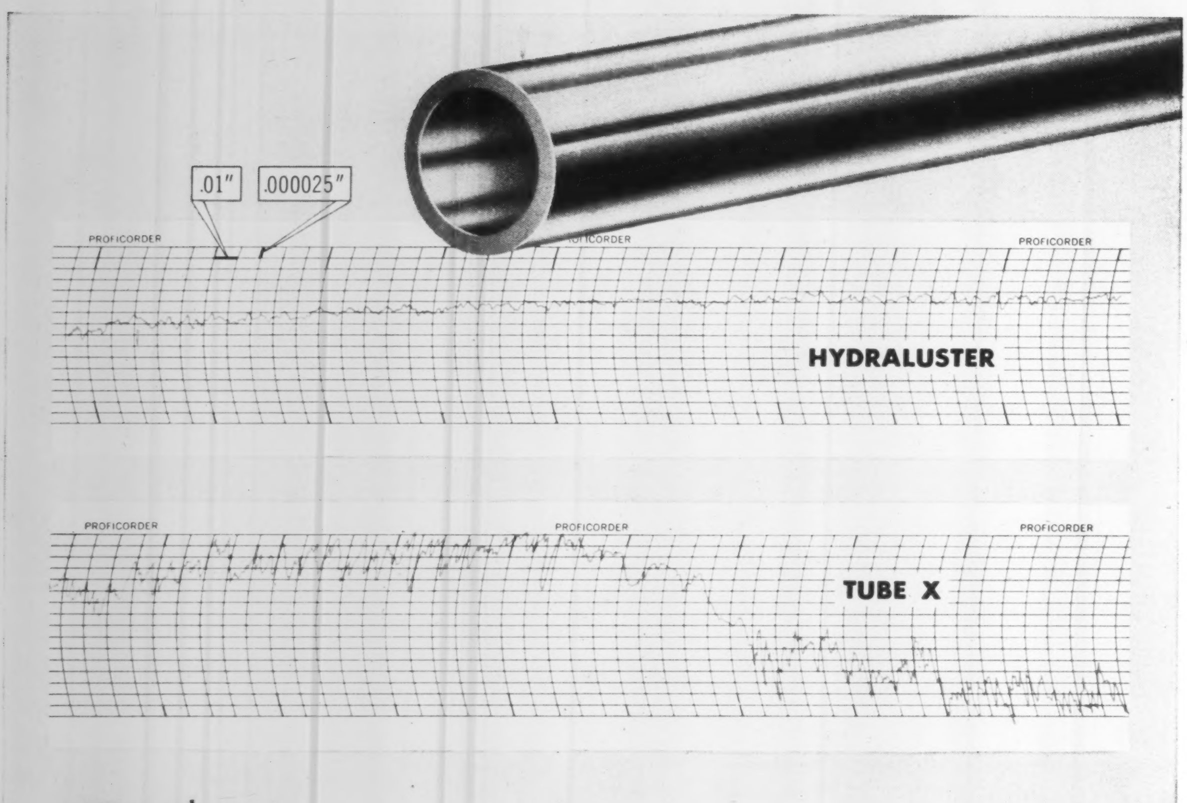
Send for this booklet! See how Whiting Foundry equipment — electric furnaces, cupolas, ladles and many other cost-cutting products can provide new efficiency for your operations. Read "Working for Profit in Every Industry", the new, pocket-size booklet which explains why the majority of America's leading corporations specify Whiting products. There's other helpful information here, too . . . on Whiting Cranes . . . on Trambeam Overhead Systems . . . in fact on every Whiting product used in your type of industry. Write today for a copy of "Working for Profit", *Whiting Corporation, 15643 Lathrop Avenue, Harvey, Illinois.*

working for profit

WHITING

FOUNDRY EQUIPMENT

MANUFACTURERS OF CRANES; TRAMBEAM HANDLING SYSTEMS; TRACKMOBILES; METALWORKING AND CHEMICAL PROCESSING EQUIPMENT



VERIFICATION: Measurements of Hydraluster and Tube X were made on The Proficorder—an instrument of our manufacture for accurately showing the true profile of practically any machined or finished surface. The tests were conducted in our laboratories under my personal supervision. And I verify that both tubes were measured under identical conditions. The resulting graphs show the exact differences in the samples furnished. **Douglas Palmer — Chief Inspector, Micrometrical Mfg. Co., Ann Arbor, Mich.**

In micro-inch comparison of hydraulic tubing . . .

HYDRALUSTER shows smoothest, most friction-free I.D.

These graphic red lines are recorded measurements showing a surface profile *inside* both HYDRALUSTER and a length of standard hydraulic tubing. *Both tubes were selected at random from warehouse stocks,* then accurately measured in microinches by the sensitive stylus of the famous PROFICORDER.

Hydraulic system efficiency and dependability, in a large degree, depend on factors illustrated by the red lines. Tube X is *not* a scrap piece of tubing. In fact, it represents a quality grade purchased and used every day. Which tube would you select to offer the least resistance to hydraulic flow . . . to transmit fluid with the least amount of pressure drop . . . and to create the least fluid turbulence?

Hydraluster is the answer, of course. And Hydraluster is the right tube to specify when you want to insure these same performance characteristics in your hydraulic systems.

SAMPLES AND SPECIFICATIONS: Examine Hydraluster finish yourself. Your name on company letterhead will bring specifications and a sample by return mail. *Hydraluster is sold at standard carbon hydraulic tubing prices.*

Summerill

Tubing Company Division-Columbia Steel & Shafting Co.

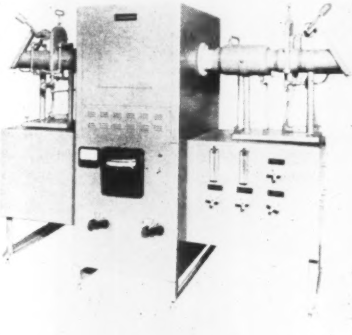
PITTSBURGH 30, PA. DEPT. NO. 1-E1

District Offices: Buffalo • Chattanooga • Cleveland • Dayton • Hartford • Philadelphia • Pittsburgh • Milwaukee • Chicago • Los Angeles • San Francisco standard No. 50 spindle nose.

The complete line of flange arbors and adapters can be held in the spindle nose. It can be dismantled in 1 minute when you want to mount face milling cutters on the spindle nose. *Write*: Cincinnati Milling Machine Co., Cincinnati 9, Ohio. *Phone*: Redwood 1-2121

Tube Furnace

Model GT-34 has a metal-ceramic tube assembly, complete with blast gates and automatic flame curtains at both ends. The 4-in. ID tube covers heat treating applications up to 2750° F. A water-jacketed cooling chamber enables the cooling of work under protective atmosphere.

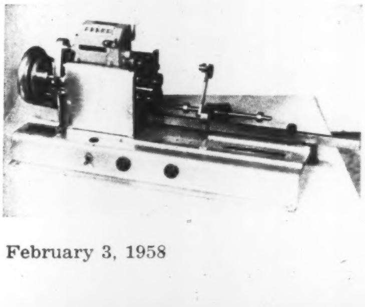


The furnace is a self-contained unit. It is prewired and piped. *Write*: Pilot Plant Equipment Div., Lindberg Engineering Co., 2321 W. Hubbard St., Chicago 12, Ill.

Bobbin Winder

Model AB feeds wire ranging from 0.002 to 0.050 in. It can wind multiple bobbins 8 in. long. By using a longer lead screw, it can wind bobbins up to 36 in. long.

The direction of traverse (normally automatic) can be changed



For Earthmoving Machines . . .

BIG GEARS needed

A "Record Breaker" in Action! Twin Powered to Handle 32 Cubic Yard Heaped Capacity Loads.

FAIRFIELD

can supply them!

GEARS to match the ever-increasing size and power of modern machines are a Fairfield specialty. This is possible because Fairfield has long been a leader in utilizing the most advanced methods, machines, and techniques for producing better gears. By keeping apace with modern engineering trends, Fairfield renders an invaluable service to many of America's machinery builders, both large and small.

At Fairfield, you get the benefits of high production rates and big volume output in an ultra-modern plant designed exclusively for producing fine gears EFFICIENTLY, ECONOMICALLY. Check with Fairfield NOW on your gear requirements. *Call or write*. FAIRFIELD MANUFACTURING CO., 2313 S. Concord Rd., Lafayette, Indiana. Telephone 2-7353.

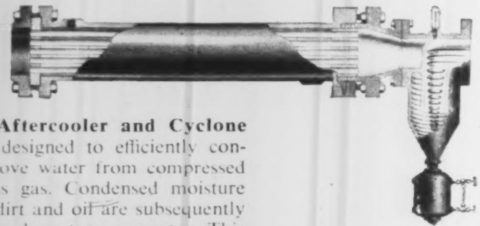
A "PLUS VALUE" IN ANY PRODUCT

Gears and Differentials For FINE GEARS *Made to Order for:*

TRACTORS • HEAVY DUTY TRUCKS • AGRICULTURAL MACHINERY • POWER SHOVELS AND CRANES
MINING MACHINES • ROAD GRADERS • BUSES • STREET SWEEPERS • INDUSTRIAL LIFT TRUCKS

Aftercooler and Cyclone Separator designed for cleaner, dryer compressed air

R. P. ADAMS CO., INC.
222 East Park Drive, Buffalo 17, New York



The Adams Aftercooler and Cyclone Separator are designed to efficiently condense and remove water from compressed air and process gas. Condensed moisture and entrained dirt and oil are subsequently removed in a cyclone type separator. This unit is scientifically designed for maximum removal efficiency over a wide range of flow rates.

For normal use, units are available to cool gases to within 10° F of the temperature of the cooling water. Specially designed units are available to permit a 2° F approach to cooling water temperature, for application where low moisture content is critical.

Adams Aftercoolers and Separators are available from stock to handle 20 - 40,000 cfm with 10° cooling and 25 - 19,200 cfm where it is necessary to cool within 2°F of the cooling water. Special units can be supplied to suit an unlimited range of requirements. In all cases the maximum pressure loss at rated capacities is ½ psi.

This wide range of sizes enables the economical utilization of Adams Aftercoolers and Separators in virtually all industrial application. For further information on how R. P. Adams' units will solve your compressed air problems and save you money, write today for Bulletin 711.

SELECT A Sterling THAT FITS YOUR JOB!

There's a Sterling Barrow for every type of hauling job, whether it's dry, bulky materials like sawdust or heavy industrial loads like castings or steel parts. Also special barrows for brick, tile, coal, concrete block and similar materials. All barrows are scientifically designed, well balanced and sturdily constructed for a long service life. Choice of wood handles or tubular steel frame, steel wheels or pneumatics. Write for new Sterling Wheelbarrow Catalog

TUBULAR STEEL FRAME

12 SPOKE STEEL WHEEL

(Above)
Model D3½S Maximum Capacity 3½ cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Steel channel legs. V-shaped front braces and brace support.

PNEUMATIC TIRED WHEEL

WOOD HANDLE BARROW

(Right)
Model C5W Maximum Capacity 5 cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Heavy-duty malleable wheel guard.

IMMEDIATE SHIPMENT

DEALERS: Want to sell quality wheelbarrows? You can on our non-exclusive basis. Write for details.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Look for this Mark of STERLING Quality

Sterling WHEELBARROWS

A 5714-½-R2

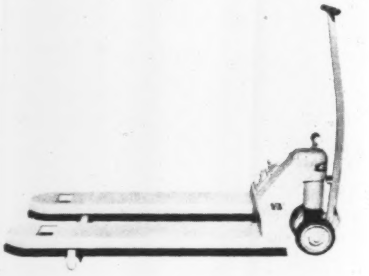
NEW PRODUCTS and equipment

at any time. Pilot lights indicate the direction of feed.

Other machines are used for winding bobbins with heavier wire. *Write*: Coil Winding Equipment Co., Oyster Bay, N. Y. *Phone*: Oyster Bay 6-1285

Pallet Truck

This hand truck has a capacity of 3000 lb. It is a hydraulic unit with rubber-tired front wheels and aluminum rear wheels.



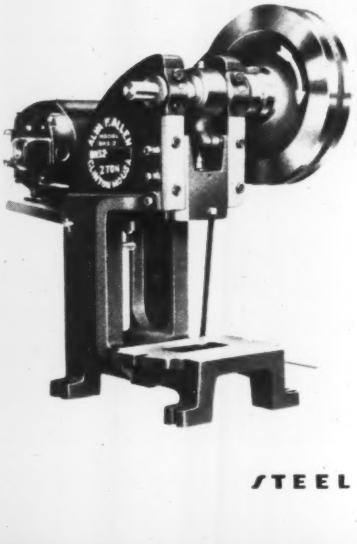
Carrying frame sizes are from 18 to 30 in. wide and 30 to 60 in. long.

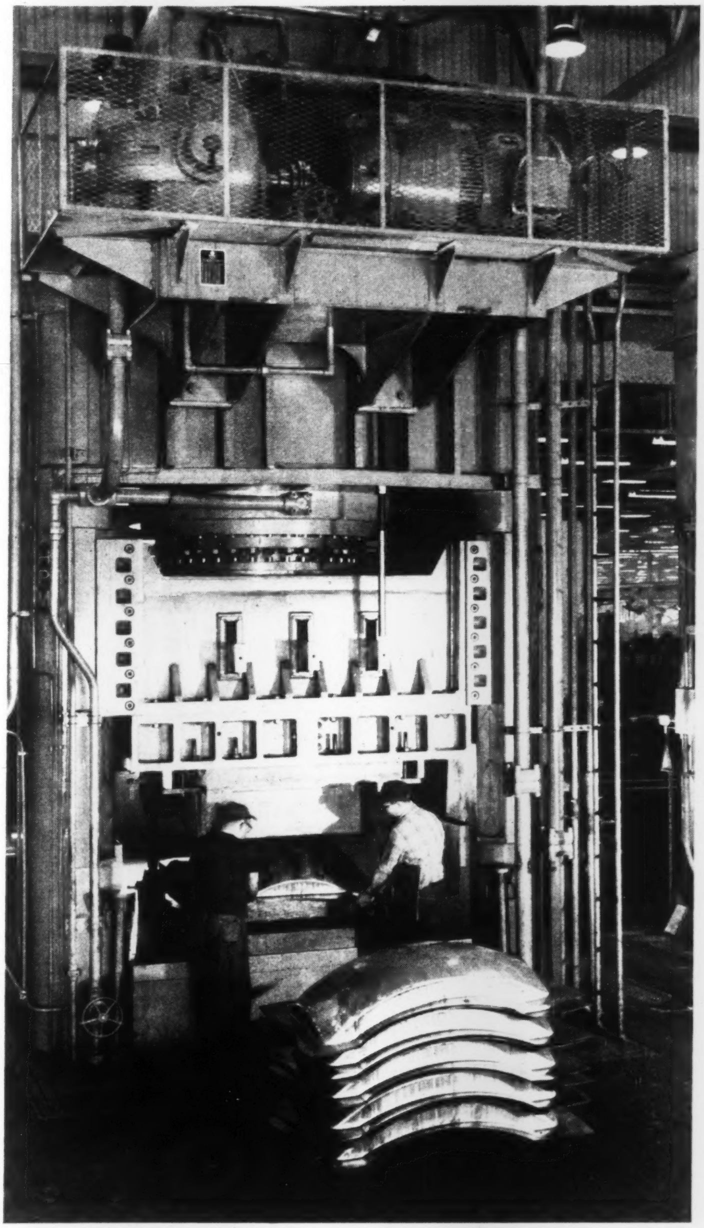
A 270-degree steering arc makes the truck maneuverable in close quarters. *Write*: Raymond Corp., 91-161 Madison St., Greene, N. Y. *Phone*: 204

Punch Press

Model BHS-2 is a 2-ton unit with a throat and shut height comparable to most standard 5-ton models.

Standard stroke is ¾ in.; ¼





HPM

3000 TON PUSH-BUTTON POWER PACKAGE AT *CATERPILLAR TRACTOR* CO.

Heavy gauge fenders for wheel type tractors are just one of many parts formed on this 3000 ton H-P-M press at Caterpillar Tractor Company, Decatur, Illinois. In this, the world's largest motor grader and wheel type tractor plant, dependable H-P-Ms are a vital part of two modern production lines. This 3000 ton H-P-M is typical. H-P-Ms with infinite control of clamping and forming pressure offer adjustable ram speed, Fastraverse® approach and ram return. All controls are at the operator's fingertips. Quick set-up and interchange of dies, are assured. A complete line of heavy-duty presses from 5 to 25,000 ton capacity makes H-P-M a prime consideration for your production planning. See your H-P-M field engineer at the planning stage or write the factory in Mount Gilead.

H-P-M is Growing—Now More Than Ever Before, Dependable H-P-Ms Are Available For All Your Metalworking Needs.

- Presses for Drawing, Forming, Coining, Forging, Briquetting, Straightening, Extruding
- Henry & Wright Dieing Machines
- Die Casting Machines
- Hydraulic Pumps, Valves, Cylinders, Power Units

H805

THE HYDRAULIC PRESS MFG. COMPANY

A DIVISION OF KOEHRING COMPANY • MOUNT GILEAD, OHIO, U. S. A.

HPM

Ask Standard

how to cut costs with conveyors

Standard limit-switch-controlled Automatic Reciprocator is one of two used to form 200-ft. overhead detour of dehumidifier assembly line.

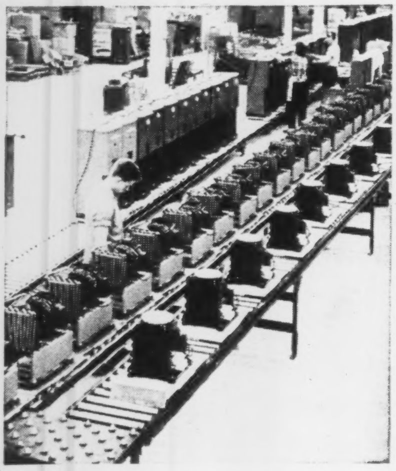
"COMPLETE CONVEYORIZING" ...what it did in a smaller plant

Products at Ebco stay on conveyors until packaged and sent to shipping.

Ebco Manufacturing Company — employing 275 people to produce water coolers, beverage dispensers and dehumidifiers — has realized substantial savings by completely conveyorizing their operations. Ebco engineers planned for an orderly conveyor system when developing plant layout and building design; consequently conveyor system costs were kept "low" and resulting efficiency is "excellent."

Similarly, it will pay you to take another close look at your present conveyor system. Standard specialists will be pleased to help you make evaluations . . . recommend the proper equipment and its application to meet your specific needs.

STANDARD CONVEYOR COMPANY, North St. Paul 9, Minnesota. Sales and Service in Principal Cities.



Gravity roller conveyors like this, used for Ebco's assembly lines, are inexpensive, easy to set up, and economical to maintain.

For details on Standard Conveyors of all types, contact the Standard representative listed in your classified phone book or write direct. Ask for Bulletin Y-2.

Standard

50 years of conveyor experience

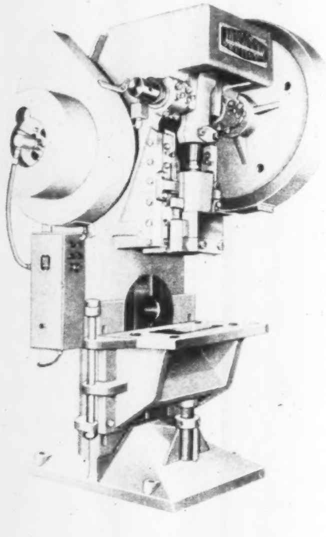
GRAVITY & POWER CONVEYORS

to 1½ in. strokes are available.

The flywheel (for V-belt drive) has a recommended speed of 300 rpm and requires a 1/3-hp motor. *Write*: Alva Allen Industries, Clinton, Mo. *Phone*: 1286

Horn Press

The H-60 is a 60-ton press offered in flywheel and single back geared models. Standard features include an air clutch and electrical controls.

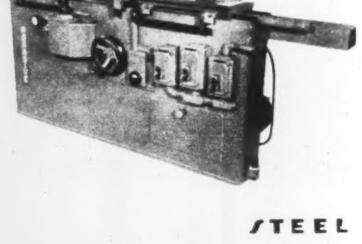


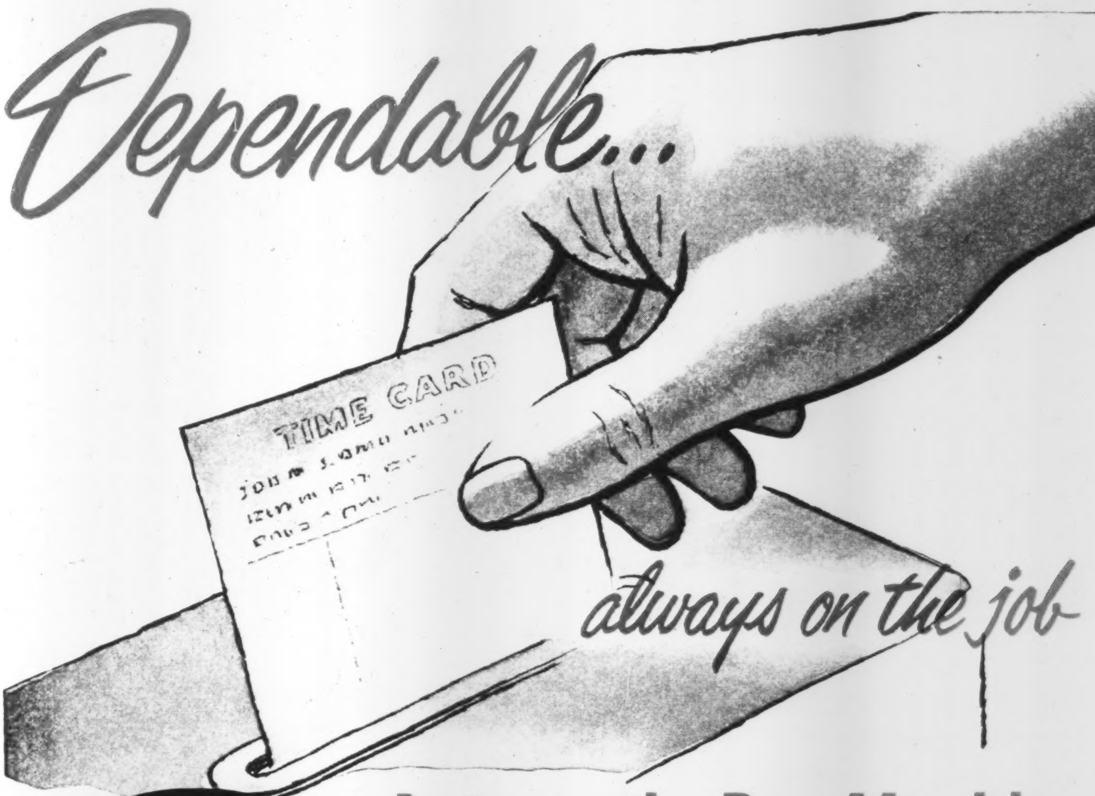
Standard stroke is 4 in. *Write*: Johnson Machine & Press Corp., 620 W. Indiana Ave., Elkhart, Ind. *Phone*: 2-7515

Knife Grinder

This hydraulic machine can grind 1500 blades, 8 in. long, in 8 hours. It has an 8 x 47 in. table and a spindle powered by a 3-hp (at 1160 rpm) motor.

The machine can be used for flat

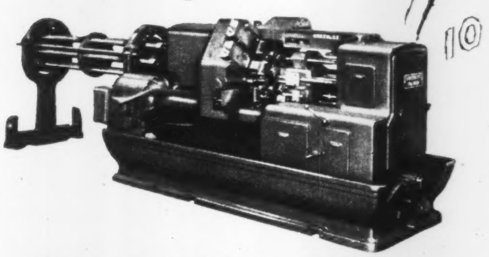




PRODUCTION MACHINERY

GREENLEE

Automatic Bar Machines



SIX AND FOUR-SPINDLE AUTOMATIC BAR MACHINES

GREENLEE Special Machine Tools

- Multiple-Spindle Drilling and Tapping Machines
- Transfer-Type Processing Machines
- Hydro-Borer Precision Boring Machines

BOOST PRODUCTION
REDUCE DOWN TIME

It's easy to maintain rigid production schedules . . . prevent costly bottlenecks with Greenlee Bar Automatics. They are always on the job . . . give continuous, reliable service.

You hear much comment about Greenlees' uninterrupted, round-the-clock performance in widely different industries. With good reason, too, for Greenlee offers years of manufacturing experience... plus manufacturing integrity not often duplicated.

Want complete information? Call in the Greenlee man. Let him give you the complete story. Please submit a print when inquiring about a specific job.

WRITE FOR CATALOG No. A-405

GREENLEE
BROS. & CO.

1922 MASON AVENUE
ROCKFORD, ILLINOIS

SEALED
TO KEEP CONTAMINATION OUT
. . . . LUBRICATION IN!

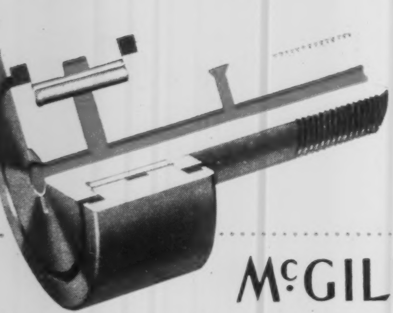
only McGILL®
sealed *CAMROL*®
cam followers give you . . .
effective sealing
prelubrication
high radial and shock capacity
in a full range of sizes

Effective sealing of the CAMROL cam follower against moisture, dirt, chips, etc. guarantees longer service life . . . reduces maintenance. This sealed construction retains lubricant and eliminates need for frequent relubrication, so often undesirable in cam action, guide support and track roller applications.

Special seals are built in at stud and flange ends. A black oxide finish on all exposed surfaces offers outside corrosion resistance. The channeled reservoir above the rollers in the outer raceway bore helps store reserve lubricant, sufficient in most cases for lifetime service. Relubrication is possible through convenient oil holes. The new SCF sealed CAMROL cam followers interchange with proven standard CAMROL cam followers. Standard stock with roll diameters up to 4″ are available for both stud and shaft mounting.

For maximum bearing life where contamination is a problem, specify sealed CAMROL cam followers. Ask your McGill representative or our engineering department for recommendations.

Write for Catalog No. 52-A



McGILL®

MULTIROL® GUIDEROL® CAMROL®
Precision Needle Bearings

McGILL MANUFACTURING COMPANY, INC., 301 N. LAFAYETTE ST., VALPARAISO, INDIANA

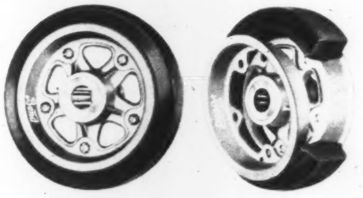
and hollow production grinding.

A 12-in. steel back wheel is standard equipment, and the machine can be furnished with a wet attachment. *Write*: Abrasive Machine Tool Co., Dexter Road, East Providence, R. I. *Phone*: Geneva 4-0550

Rubber Tired Wheels

Downtime is reduced with these wheels because tires can be replaced in minutes.

The two sections of the wheel are keyed to fit. This simplifies assembly and there is no shearing strain on the bolts.

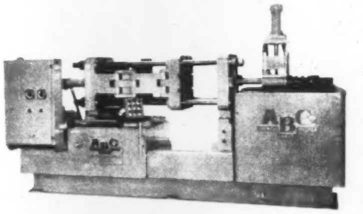


Replacement costs are less because only the tire, not the whole wheel, is changed. The tread of the tire is tough and mounted permanently to a hard base.

Tires are available in soft, rolling G-1; hard G-2; and oil resisting G-3 neoprene compound. *Write*: Bond Foundry & Machine Co., Manheim, Pa.

Diecasting Machine

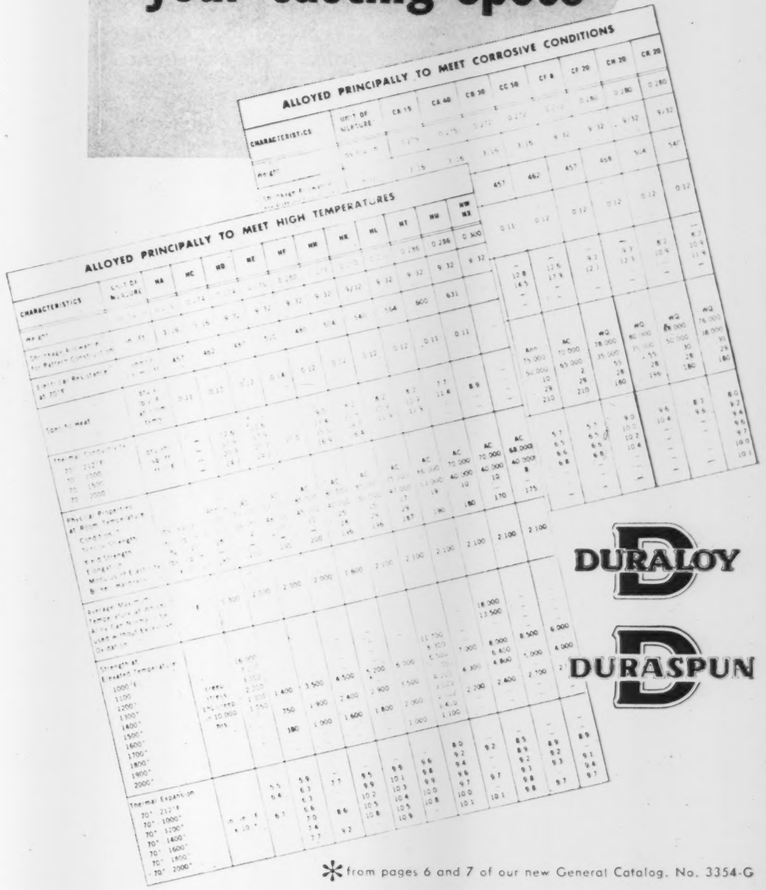
Model 500 is a hydraulic machine with 150 tons of locking pressure for diecasting zinc. It has a shot capacity of 7 lb. The tiebars are 2½ in., and the steel platens are 24 x 24 in.



The machine can be converted to aluminum with a cold chamber attachment. *Write*: ABC Die Casting Machine Co., 400S E. 142nd St., Dolton, Ill. *Phone*: Pullman 5-0583

***TABLES**

to help you select the proper alloy for your casting specs



ALLOYED PRINCIPALLY TO MEET CORROSIVE CONDITIONS
ALLOYED PRINCIPALLY TO MEET HIGH TEMPERATURES

DURALOY

DURASPUN

* from pages 6 and 7 of our new General Catalog. No. 3354-G

— and there's lots more useful information about high alloy castings in our up-to-date catalog describing Duraloy Service. SEND FOR YOUR COPY.

As one of the pioneers in both static (1922) and centrifugal (1931) high alloy castings, we have a wealth of experience to focus on your high alloy casting problem. Send for our catalog, study it, and then let us help you get the best alloying combination to solve your corrosion, high temperature and/or abrasion problem.

The DURALOY Company

OFFICE AND PLANT: Scottdale, Pa.

EASTERN OFFICE: 12 East 41st Street, New York 17, N. Y.
ATLANTA OFFICE: 76—4th Street, N.W.
CHICAGO OFFICE: 332 South Michigan Avenue
DETROIT OFFICE: 23906 Woodward Avenue, Pleasant Ridge, Mich.

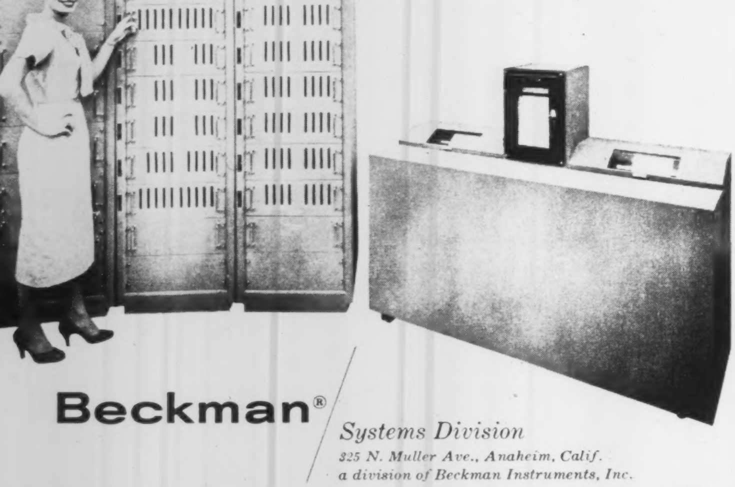
Magnetic-Core Coil Classifier Inspects Tin Plate Continuously, Automatically

Beckman coil classifiers are measuring and recording characteristics and defects of tin plate around-the-clock, in continuous on-line operation. Linear travel, pinhole footage, over- and under-gage tolerances, coatings, quenching strain, slivers, abrasions, damaged edges are all detected and recorded while coils are rolling and shears flying.

Data from detectors is supplemented by manual entries showing date, purchase order, coil, line, and turn numbers. All information is then delayed for correct relationship to shear position. Upon shear activation, the appropriate totalized data is recorded on preprinted formats, with separate records for quality control and customer information. This in-process correlation of upstream detection with shear control and data printout permits accurate profiling of product with no lag in production – increases profit margins.

No vacuum tubes are used – all electronic circuitry consists of extremely reliable, toroidal magnetic cores and other passive elements. Without modification, Beckman coil classifiers are compatible with data reduction systems and in-process control.

Coil classifiers are typical of the many reliable system applications of Beckman counters and timers, proved in thousands of field installations. For more information on counting and timing system applications, write for Data File 5D-13-67.



Beckman® *Systems Division*
325 N. Muller Ave., Anaheim, Calif.
a division of Beckman Instruments, Inc.

Responsible new positions in engineering, manufacturing, technical marketing. Write for Career File 10

NEW Literature

Write directly to the company for a copy

Drill Grinder

Bulletin 4400, 4 pages, describes the principle of drill grinding and the design and construction features of a machine that grinds drills from 1¾ to 5 in. in diameter. Consolidated Machine Tool Div., Farrell-Birmingham Co. Inc., 565 Blossom Rd., Rochester 10, N. Y.

Springs

Design data and end uses for coned disc springs are presented in this 12-page bulletin. Union Spring & Mfg. Co., New Kensington, Pa.

Bonded Flux

This 4-page bulletin demonstrates the effect of varying welding speed, current, voltage, or flux burden when using submerged arc welding on stainless or low alloy steels. Arcos Corp., Philadelphia, Pa.

Heat Treating Fixtures

Retorts, baskets, muffles, trays, boxes, and other fixtures used in heat treating are described in this folder. Wiretex Mfg. Co. Inc., 10 Mason St., Bridgeport, Conn.

Gundrilling

This data sheet tells how to make a gage for measuring the accuracy of gundrill nose tips. Eldorado Tool & Mfg. Corp., 336 Boston Post Rd., Milford, Conn.

Bucket Elevators

Systems for handling dusty abrasive materials are covered in Bulletin P-40, 10 pages. Prab Conveyors Inc., 30121 Groesbeck Highway, Roseville, Mich.

Tubing Weights

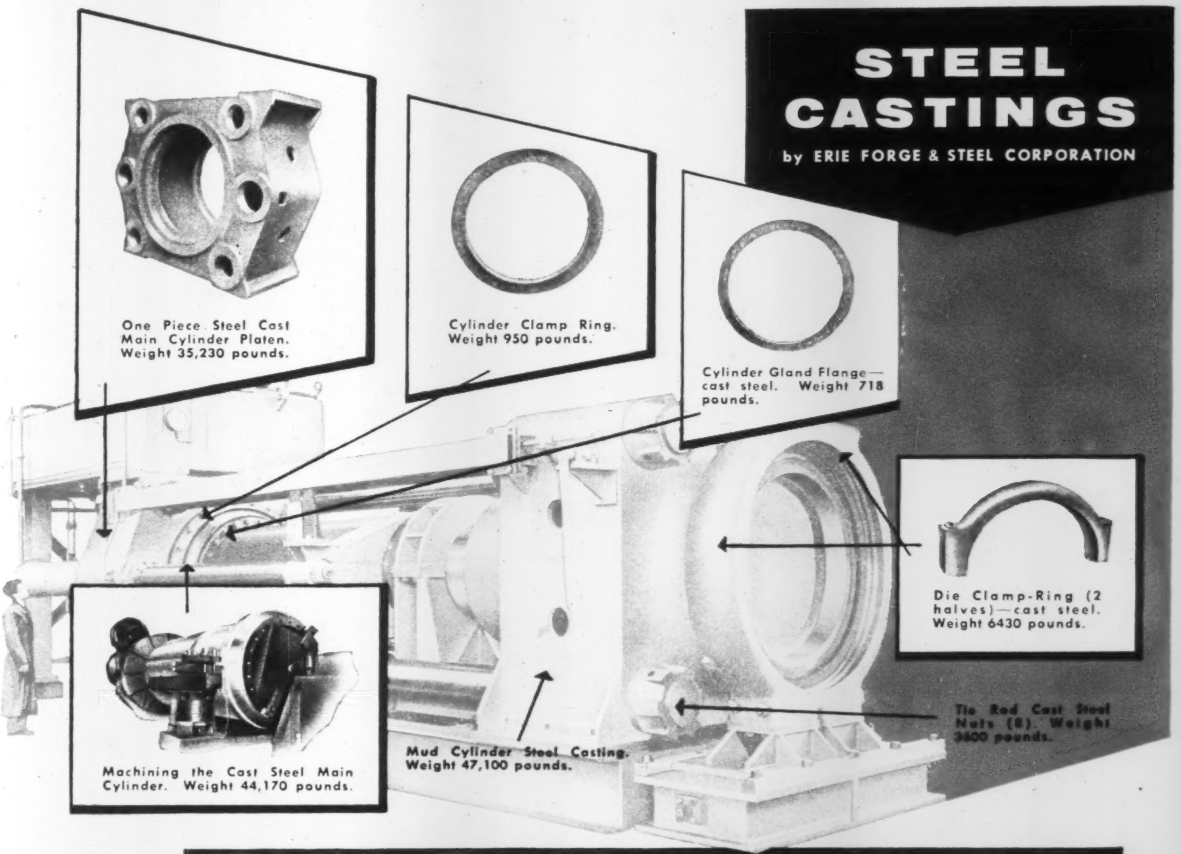
Tables in this 12-page bulletin cover tubing from 1/16 in. OD with a 0.004 in. wall to 10¾ OD with walls 1⅝ in. thick. Simplified instructions tell how to determine weights of square and rectangular steel tubing. Weights for both average and minimum walls are listed. Rome Mfg. Co. Div., Revere Copper & Brass Inc., Box 111, Rome, N. Y.

Lift Trucks

Drawings, specifications, and descriptions of electric walkie-type trucks for stacking are covered in three bulletins. Each of the 4-page folders covers a truck of a different

STEEL CASTINGS

by ERIE FORGE & STEEL CORPORATION



One Piece Steel Cast Main Cylinder Platen. Weight 35,230 pounds.

Cylinder Clamp Ring. Weight 950 pounds.

Cylinder Gland Flange—cast steel. Weight 718 pounds.

Die Clamp-Ring (2 halves)—cast steel. Weight 6430 pounds.

Tie Rod Cast Steel Nuts (8). Weight 3600 pounds.

Mud Cylinder Steel Casting. Weight 47,100 pounds.

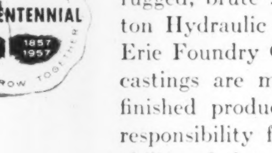
Machining the Cast Steel Main Cylinder. Weight 44,170 pounds.

— for Erie Foundry Company's 2000 Ton Hydraulic Carbon Extrusion Press

STEEL CENTENNIAL
AMERICA AND STEEL MUST GROW TOGETHER
1857 1957

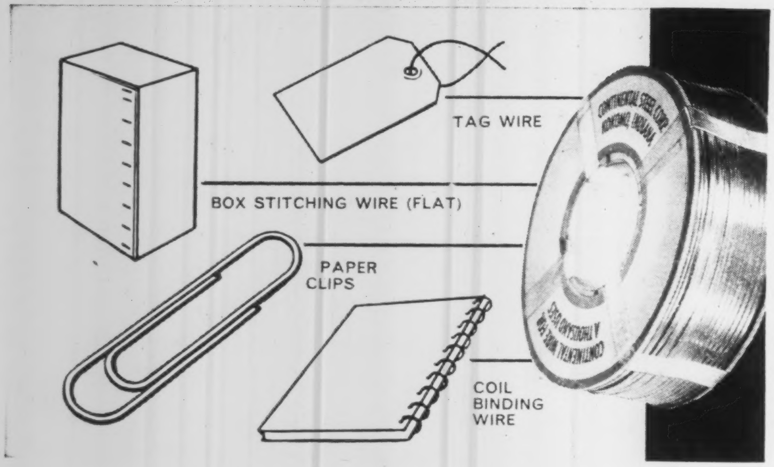
Some 73 tons of steel castings by Erie Forge & Steel Corporation provide the rugged, brute strength built into this 2000 ton Hydraulic Carbon Extrusion Press by Erie Foundry Company in Erie, Pa. Steel castings are made from raw materials to finished product within our plants. The responsibility for the quality and dependability of these components in the finished machine rests squarely upon our shoulders.

Many years of experience in making specification steel components, both cast and forged, for Erie Foundry Company's heavy hydraulic presses and forging hammers suggest that we can serve you in a similar satisfactory and profitable manner. Steel castings and forgings are produced completely here "Under One Responsibility and One Control". Every step in their production from beginning to end is directed and closely followed by our metallurgical quality control and engineering supervision. You may expect a call from your nearest Erie Forge & Steel Corporation field engineer in the near future.



ERIE FORGE & STEEL CORPORATION
ERIE, PENNSYLVANIA
MEMBER AMERICAN IRON AND STEEL INSTITUTE

ERIE FORGE & STEEL CORPORATION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BOX STITCHING WIRE (FLAT)
PAPER CLIPS
COIL BINDING WIRE
CONTINENTAL STEEL CORP. KOKOMO, INDIANA

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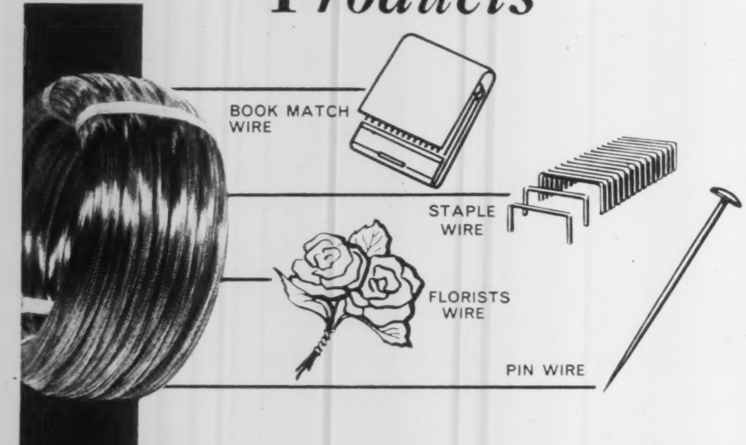

● You are probably closer to Continental Wire than you think. It could be that your very shoes, the book matches in your pocket or the paper clips in your desk—were made using dependable Continental Fine Wire! That's because Continental is preferred by hundreds of leading firms for literally thousands of different fine wire applications. For super fine products—you, too, should try Continental Fine and Specialty Wire, available in many sizes, of almost any temper, finish or analysis, in low carbon and medium low carbon steels.

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STEEL CORPORATION • KOKOMO, INDIANA

Wire Specialists for over half a Century

PRODUCERS OF: Manufacturers' Wire in many sizes, tempers, and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, and special shaped wire. Also Welded Wire Reinforcing Fabric, Nails, Continental Chain Link Fence, and other products.

lifting capacity—2000, 2500, or 3000 lb. Automatic Transportation Co., division of Yale & Towne Mfg. Co., 149 W. 87th St., Chicago, Ill.

Refractory Mortars

Bulletin 600, 6 pages, includes installation photographs, product features, and technical data. J. H. France Refractories Co., 1944 France Rd., Snow Shoe, Pa.

Overhead Doors

Savings through reductions in heat losses and time lost in opening and closing doors are described in Bulletin F8436, 8 pages. Dept. 5J, Barber-Colman Co., Rockford, Ill.

Fork Truck Safety

This guide for setting up a training course for fork truck drivers emphasizes safety—8 pages. Dept. R-23, Lewis-Shepard Products Inc., 125 Walnut St., Watertown 72, Mass.

Machine Tool Lubrication

This 20-page bulletin describes lubrication and hydraulic systems of special machine tools used in automation. Snyder Tool & Engineering Co., 3400 E. Lafayette Ave., Detroit 7, Mich.

Centrifugal Pumps

Horizontally split, single-suction pumps with three, four, six, or eight stages for capacities of 200 to 2800 gallons a minute are described in this 6-page bulletin, 7148-A. Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.

Honing

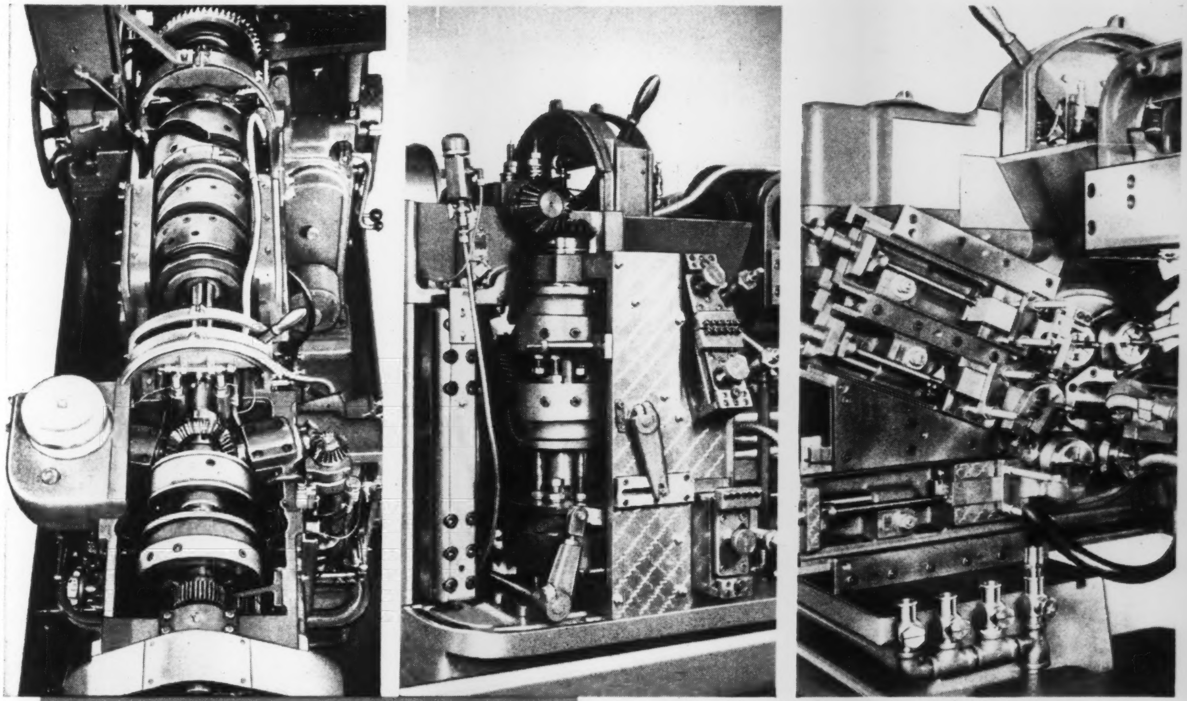
The machines, tools, fixtures, abrasives, and coolants used for honing cylindrical, spherical, and flat surfaces are discussed in this 32-page bulletin. Micromatic Hone Corp., 8100 Schoolcraft Ave., Detroit 38, Mich.

Aluminum Dip

Bulletin 21, 2 pages, tells how to use a bright dip to produce a brilliant luster on nonsilicon aluminum alloys. A liquid addition agent for nitric-phosphoric acid bright dip baths is described in Bulletin 21B-2. It restores luster producing properties. MacDermid Inc., Waterbury, Conn.

Gearmaking Machines

Gear production machines, broaching tools, rotary shaving machines, gear tooth honing machines, sound testing machines, checking machines, gear and spline grinders, shaving cutters, and various types of automated gear shaving and inspection ma-



Seven Fast Changeover Models

With the prospects of improved tool materials ever decreasing the actual machining time of work on Multiple Spindle Automatics, long runs tend to become short runs. Facility that decreases the time for job changes becomes more important to low-cost production.

Conomatics are available in as many as seven fast changeover models. These are the $\frac{9}{16}$", 1", $1\frac{5}{8}$" Sixes, and the $2\frac{5}{8}$", $3\frac{1}{2}$", 5", and $5\frac{1}{4}$" Fours.

These models are equipped with dial adjustment of working stroke of all slides, without making necessary change of total stroke or positive stop settings. Write, wire, or phone for literature descriptive of these features and other facilities available to users, or prospective users.

Conomatic

CONE AUTOMATIC MACHINE COMPANY, INC., WINDSOR, VT., U.S.A.

chines are described in this 24-page bulletin, AP 57-11. National Broach & Machine Co., 5600 St. Jean Ave., Detroit 13, Mich.

Cleaners

Combination blower-suction cleaners that can be operated by one hand are described in this 4-page bulletin. Industrial Products Div., Clements Mfg. Co., 6650 S. Narragansett Ave., Chicago 38, Ill.

Pressure Vessel Design

This 4-page index tells where in the ASME code to find references to specific construction details, when radiographing is required, when stress relieving is required, and where to find ASME and TEMA references to heat exchanger design features. Dept. C., Downingtown Iron Works Div., Pressed Steel Tank Co., Downingtown, Pa.

Mounted Abrasive Wheels

This 30-page discussion covers grinding action, wheel markings, grades, bond types, abrasive types, structure, grain size, spindles, treatments, and specific recommendations. Bay State Abrasive Products Co., Westboro, Mass.

Toolholders

Ways to reduce machining costs through the use of toolholders and inserts are outlined in VR-438, a 56-page manual. It discusses the factors bearing on the selection of toolholders —the correct tool geometry and depth of cut required, the material to be machined, toolholder shank size, type of insert, the precision required, proper carbide grade, and chipbreaker plate data. A troubleshooting chart pinpoints the answers to machining problems. Vascoloy-Ramet Corp., Waukegan, Ill.

Die Sets

Catalog 570, 63 pages, describes features and specifications of die sets (including straight-sided sets), their components and accessories. Standard Die Set Co., division of Harsco Corp., 1485 Elmwood Ave., Providence 7, R. I.

Shaft-Retention Fasteners

Advantages of various types of shaft fasteners and available sizes are covered in this 8-page bulletin. Fastex Div., Illinois Tool Works, 195 Algonquin Rd., Des Plaines, Ill.

Variable Speed Drives

Bulletin 550, 12 pages, describes drives that produce increased torques at either maximum or minimum speed, whichever the application requires. Graham Transmissions Inc., Menomonee Falls, Wis.

Heat Transfer

Bulletin 156, 4 pages, describes external heat exchangers, immersion heating units, and steam jet agitators made of graphite for use in anodizing, electroplating, and pickling. Heil Process Equipment Corp., 12901 Elmwood Ave., Cleveland 11, Ohio.

Fasteners

Driving tools, commercial fasteners, and blind rivets are covered in this 12-page bulletin, 8-416. Huck Mfg. Co., 2480 Bellevue Ave., Detroit 7, Mich.

Positioning Control

Bulletin GET-2676, 14 pages, describes the functions of numerical positioning control and gives a de-

5,106,250 LABORATORY DETERMINATIONS AND STILL GOING STRONG!

A LARGE METALS PRODUCER REPORTS ON THE **BAIRD-ATOMIC** DIRECT READING SPECTROMETER:

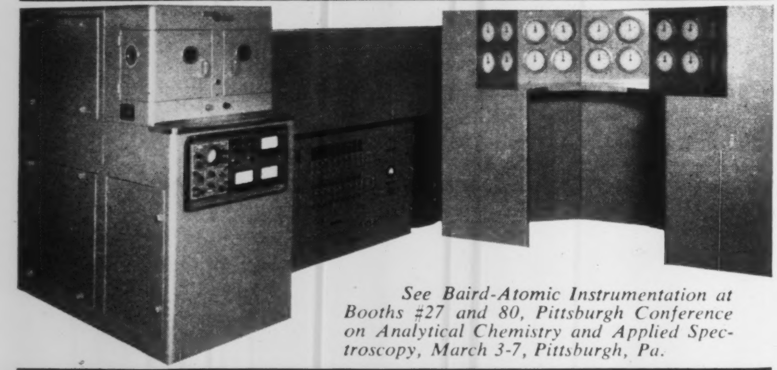
"During the past *10 years* we have used the Baird-Atomic Direct Reader for spectrochemical analysis making 5,106,250 determinations in 377,350 tests controlling 70,920 heats.

"Our laboratory costs, per determination, were reduced from *91¢* by chemical analysis, to 4¢ with the B-A Direct Reader. Analytical time per test was reduced from *26* minutes to *5* minutes, saving *21* minutes of furnace time (rated at $1.50 per minute), on every test.

"Additional savings include: reduced loss of alloying elements — longer furnace lining life — increased efficiency in production planning — elimination of 'off heats'.

"Of course, the most important result is our ability to produce a HIGHER QUALITY PRODUCT for our customer."

This report on the B-A Direct Reading Spectrometer exemplifies the *long term reliability and substantial savings* made possible by this unique, rapid method of spectrochemical analysis.



See Baird-Atomic Instrumentation at Booths #27 and 80, Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, March 3-7, Pittsburgh, Pa.

For information on how you can reduce costs with the B-A Direct Reader, write to:

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33 UNIVERSITY RD., CAMBRIDGE 38, MASS.

Baird Atomic

Instrumentation for Better Analysis

tailed breakdown of data input, director, and servodrive elements. General Electric Co., Schenectady 5, N. Y.

Electrolytic Tool Grinder

A combination electrolytic chipbreaker and cup wheel grinder is described in this 2-page bulletin. Anocut Engineering Co., 631 W. Washington Blvd., Chicago 6, Ill.

Turntables

Welded steel turntables from 36 to 96 in. in diameter are described in this 4-page bulletin. Single and cross track units are pictured. Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland 10, Ohio.

Production Ovens

This 2-page bulletin describes ovens for truck or rack loading available in gas or electrically heated models. Despatch Oven Co., 619 S. E. Eighth St., Minneapolis, Minn.

Dust Control

This 36-page catalog, 104, describes a line of dust filters and gives detailed information about dust control systems and how to engineer them. W. W. Sly Mfg. Co., 4700 Train Ave., Cleveland 1, Ohio.

Lift Truck

This 4-page bulletin describes a lift truck that comes in 1500, 2000, and 3000 lb capacity models. John Morrell Mfg. Co., 525 Highland Ave., Elgin, Ill.

Power Strapping

Air and electric powered tools for strapping are described in this 12-page bulletin. Stanley Steel Strapping, division of Stanley Works, New Britain, Conn.

Flexible Couplings

Bulletin 10100, 8 pages, tells how to select couplings that withstand all combinations of misalignment and end float and will absorb up to 15 degrees of torsional shock. More than 150 service applications are listed. T. B. Wood's Sons Co., Chambersburg, Pa.

Motor Controls

Catalog 5800, 56 pages, contains data on magnetic starters and contactors, drum controllers, pressure switches, pushbuttons, and other motor control and pilot devices. Tables combine horsepower, motor speed, heater size and ampere ratings, plus enclosure choices and prices. Furnas Electric Co., 1055 McKee St., Batavia, Ill.

Precision Grinding

This 8-page bulletin describes rotary surface grinders, cylindrical grinders, and a tape controlled positioning table. Arter Grinding Machine Co., 28 Sagamore Rd., Worcester 5, Mass.

Temperature Controls

Thermostats with a sensitivity of 0.1° F and a range of 700° F and their advantages are described in Bulletin MC-157, 4 pages. Fenwal Inc., Pleasant Street, Ashland, Mass.

Ultrasonic Testing

Inspection methods and equipment used in quality control, production testing, and preventive maintenance are described in Bulletin 50-107, 12 pages. Sperry Products Inc., Shelter Rock Road, Danbury, Conn.

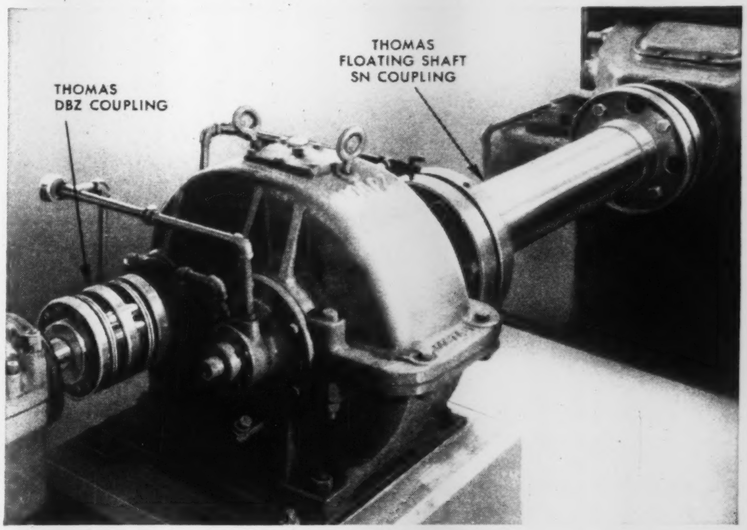
Heating Elements

Quartz infrared elements that provide a peak emission at 2.3 microns are covered in Bulletin 571, 4 pages. Quartz Products Corp., Plainfield, N. J.

Bearing Metals

This 4-page bulletin describes advantages of a bronze in withstanding heat and load. Bearium Metals Corp., 190 Mill St., Rochester 14, N. Y.

THOMAS FLEXIBLE COUPLINGS
Give You Freedom From Coupling Maintenance



NO LUBRICATION · NO MAINTENANCE · NO WEARING PARTS

Future maintenance costs and shutdowns are eliminated when you install Thomas Flexible Couplings. These all-metal couplings are open for inspection while running.

They will protect your equipment and extend the life of your machines.

Properly installed and operated within rated conditions, Thomas Couplings should last a lifetime.

Under Load and Misalignment only Thomas Flexible Couplings offer all these advantages:

1 Freedom from Backlash Torsional Rigidity
2 Free End Float
3 Smooth Continuous Drive with Constant Rotational Velocity
4 Visual Inspection While in Operation
5 Original Balance for Life
6 No Lubrication
7 No Wearing Parts
8 No Maintenance

Write for Engineering Catalog 51A

THOMAS

THOMAS FLEXIBLE COUPLING COMPANY
WARREN, PENNSYLVANIA, U.S.A.

DELIVERY WHEN YOU WANT IT from... *Acme-Newport Steel*

© RED CIRCLE SERVICE

RED CIRCLE SERVICE

For those who cut their inventories until it hurts, Acme-Newport has inaugurated Red Circle Service, a specially conducted mill tour for spot orders. A bright red circle is placed on every rush order to alert all departments to give preferential attention right through to rail, truck or barge. Red Circle Service combines the flexibility of operation of a mill this size, with Acme-Newport's modern facilities and 73 years' experience. You get high-quality steel to your specification *. . . and you get it when you want it.* Enlist Red Circle Service in your program of inventory control!

PRODUCTS OF ACME-NEWPORT STEEL

HOT ROLLED STEEL IN COIL
HOT ROLLED PICKLED STEEL IN COIL
HOT ROLLED SHEETS
HOT ROLLED PICKLED SHEETS
COLD ROLLED STEEL IN COIL (*Full Hard only*)
COLD ROLLED SHEETS
ALLOY SHEETS AND PLATES
PLATES (*3/16" and lighter*)
ELECTRIC WELD LINE PIPE

Acme-Newport Steel COMPANY
NEWPORT, KENTUCKY
A SUBSIDIARY OF ACME STEEL COMPANY

STEEL
February 3, 1958

Market Outlook

SIGNS ARE appearing that the steel ingot rate is bouncing near the bottom. The January survey of the National Association of Purchasing Agents shows a significant number of buyers think we won't go much lower. STEEL's quarterly survey of metal users indicates they're still cutting stocks but at a less rapid rate. Inventories are stabilizing at the 30 to 60 day level.

SCRAP BULLISH— That economic bellwether, scrap prices, also hints at better conditions ahead. STEEL's composite on scrap rose $1.25 last week. At $35.50, the index is at the highest level since October. When scrap prices rise, that often presages an ingot rate increase.

MARCH PICKUP— Although February mill shipments are likely to be down from those in January, buying for March and early spring delivery may be up noticeably before the month's end. That will be attributable largely to seasonal influences, particularly revival in building and agricultural activities.

BUILDING— Although there has been relatively little increase in building inquiry and fabricators' backlogs continue to shrink, structural steel activity can usually be counted upon for a surge as spring approaches.

LARGE BACKLOG— Structural shipments in 1957 (3,651,973 tons) were record breaking. Bookings at 2,780,645 tons, were off 31 per cent from the record set in 1956. At the end of 1957, fabricators held an order backlog of 2,395,088 tons, still large although 7 per cent below the preceding month's total. Over 1,125,000 tons were scheduled for fabrication through April.

LOOKING AHEAD— Steel suppliers foresee burgeoning sales in products other than plates and structurals, too—pipe, wire, bars, and sheets. Warehouse volume has been off, and distributors' customers should be coming more into the market for spring activity.

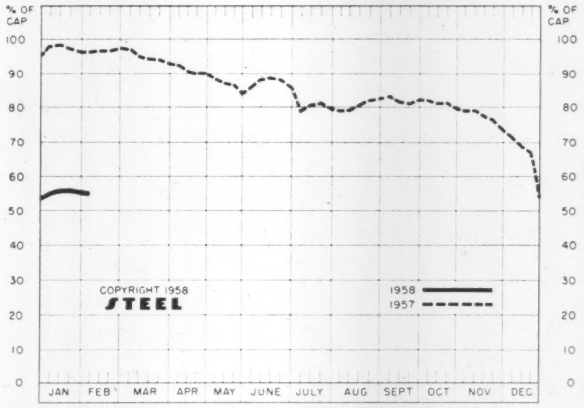
AUTOS DISAPPOINT— Yet, not much optimism can be found in autos. Automotive steel purchasers in Detroit are buying practically nothing now. In fact, some scheduled February deliveries are being shoved back to March.

PRODUCTION SLIPS— That's one reason steelmaking operations dipped again last week. (Other point-or-two drops are likely in February.) Based on Jan. 1, 1958, capacity, the ingot rate fell another half point to 55 per cent. Output is estimated at 1,480,000 tons, equal to an index figure of 92.1 (based on average weekly production in 1947-49).

PRICES HOLDING— Freight absorption is increasing. Otherwise prices are firm, with STEEL's finished steel composite unchanged at $145.42.

FREIGHT RATES— Freight rate advances, originally scheduled to go into effect Feb. 1, have been postponed until Feb. 15, presumably to permit shippers to present arguments against the proposed increases. Rates on pig iron and scrap are scheduled to go up 40 cents a ton; semifinished steel, 3 per cent; track supplies, 3 per cent; coal, 10 cents; varying amounts on iron ore, petroleum, slag, stone, and numerous other products. Finished steel products are not directly affected, but the cost of making the finished items would rise.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

	Week Ended Feb. 2	Change	Same 1957	Week 1956
Pittsburgh	59.5	+ 1.5*	99.5	101.5
Chicago	57.5	— 1*	96	101.5
Mid-Atlantic	74	0	98	102
Youngstown	54	— 1	100	98
Wheeling	55	— 1.5	102.5	100.5
Cleveland	38	— 6*	95	101
Buffalo	53.5	0	105	105
Birmingham	53	— 2.5	96.5	95.5
New England	52	0	70	89
Cincinnati	55.5	— 1	90	96.5
St. Louis	74	+ 4.5*	99.5	106
Detroit	52.5	+ 1.5*	101.5	97
Western	71	— 4	102	107
National Rate	55	— 0.5	96.5	99

INGOT PRODUCTION‡

	Week Ended Feb. 2	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	92.1†	93.1	93.4	155.5
NET TONS (In thousands)	1,479†	1,496	1,501	2,498

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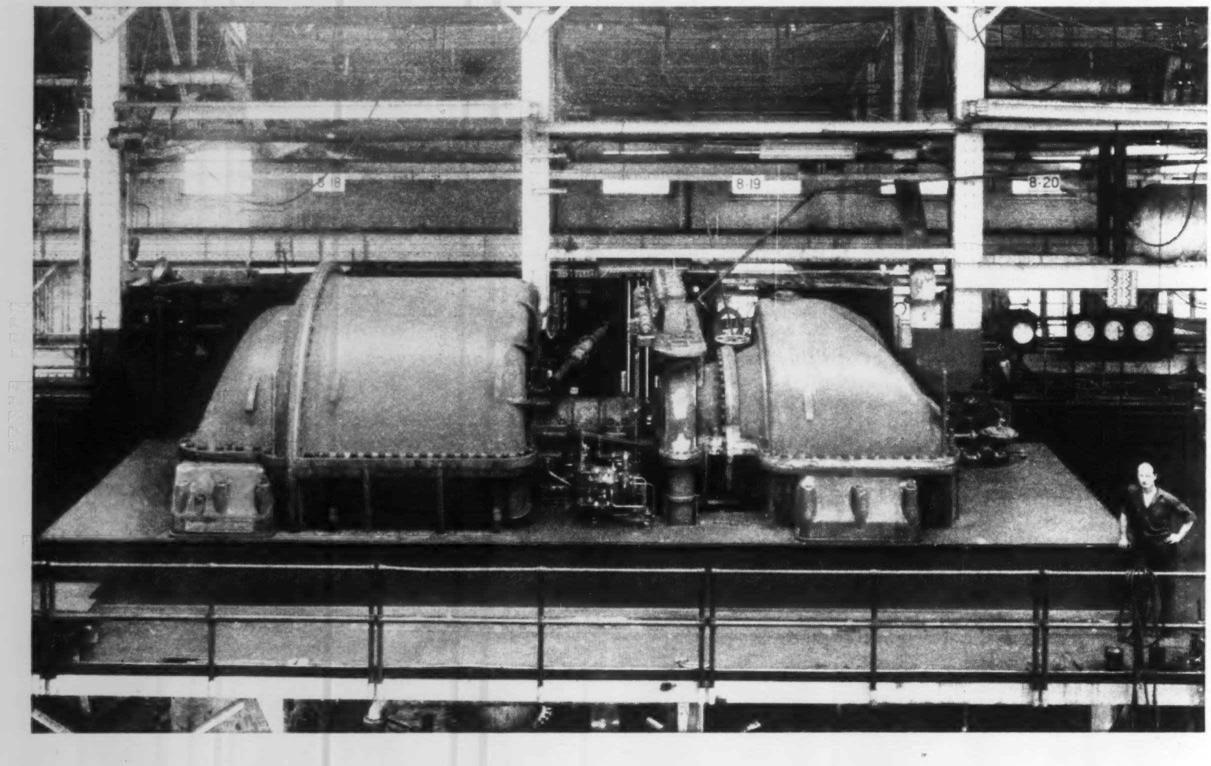
*Change from preceding week's revised rate.
†Estimated. ‡American Iron & Steel Institute.
Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1956.

Metalworking Outlook—Page 57   Technical Outlook—Page 107

FIFTH I-R Blast-Furnace Blower for INDIA'S LARGEST STEEL MILL



Tata Iron and Steel Company again selects an Ingersoll-Rand steam-turbine-driven blower

IN the photo above, an Ingersoll-Rand Turbo-Blower is undergoing final performance tests at the factory in Phillipsburg, N. J., prior to shipment half way around the world. Destination—India.

There it will join four other I-R Turbo-Blowers in blast-furnace service at the Tata Iron and Steel Co. plant in Jamshedpur. This unit is rated at 125,000 cfm, 35 psig discharge, and is driven by a 15,750 hp I-R steam turbine. It will bring Tata's total number of Ingersoll-Rand blast-furnace turbo-blowers to 5—all with I-R steam turbine drives representing a total of over 50,000 hp.

These repeat orders from far-off India reflect years of successful operating experience with other Ingersoll-Rand Turbo-Blowers and steam turbines—the first unit was shipped in 1938. Here, again, one of the world's leading steel producers has placed *quality* first by specifying I-R turbo blowers of *proved dependability.*

For specific information on Turbo-Blowers best suited to your requirements, call your Ingersoll-Rand engineer. His knowledge and experience can save you time and money from initial planning to final installation.

Ingersoll-Rand

11 Broadway, New York 4, N. Y.

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PUMPS • COMPRESSORS • DIESEL ENGINES • AIR & ELECTRIC TOOLS • TURBO BLOWERS • CONDENSERS

CURRENT INVENTORIES				
UNDER 10 DAYS	10-30 DAYS	30-60 DAYS	60-90 DAYS	3-6 MONTHS
2%	22%	42%	22%	12%
4%	18%	54%	17%	7%
4%	15%	45%	29%	7%
4%	13%	33%	33%	17%
8%	8%	36%	28%	20%
9%	7%	40%	24%	20%
3%	21%	53%	23%	—
11%	14%	56%	14%	5%

Buyers Forecast 2nd Qtr. Inventories

MILL PRODUCTS	LOWER	SAME	HIGHER
HOT-ROLLED CARBON BARS . . .	35%	60%	5%
COLD-FINISHED BARS	38%	57%	5%
H & C-R SHEETS, STRIP	41%	53%	6%
LIGHT PLATES	35%	56%	9%
HEAVY PLATES	37%	53%	10%
STRUCTURAL SHAPES	32%	66%	2%
COPPER & BRASS	31%	63%	6%
ALUMINUM	23%	71%	6%

FIGURES are percentages of respondents to STEEL's quarterly survey.
COLOR shows how most respondents reported.

Metal Buyers Are Still Cutting Stocks

Barring a sudden upturn in business, the quarter will see no reversal of the trend toward liquidation. With all products in good supply, fabricators get quick deliveries

WHEN a big user of structural shapes reports that he'll "draw from inventory for about three months before reordering," you know it's a buyers' market.

STEEL's latest survey of metal inventories shows that buyers think they'll remain in the driver's seat—until the second quarter, at least. Anticipating no delivery problems, they'll trim their stocks to minimum working levels and buy only for replacement.

Says a midwest appliance maker: "Procurement time in the present market could be cut to two to four weeks." A battery manufacturer agrees that "no leadtime beyond 30 days is necessary" and comments: "We don't see anything that is in short supply."

Few Problems — Survey participants are unanimous in saying that deliveries are generally satisfactory. In the previous survey (STEEL, Nov. 4, 1957, p. 169), 8 per cent of the buyers reported they were having trouble getting heavy plates and 6 per cent complained about deliveries of structurals. Now only 2 per cent have trouble in those categories.

Comparison of today's inventories with forecasts made three months ago shows that there has been less stability than buyers expected. In November, 60 per cent predicted their first quarter inventories would be the same; 31 per cent said they would be lower; and 9 per cent said higher. Today, 46 per cent report inventories unchanged from the November level; 36 per cent say they're lower; and 18 per cent say higher.

Nonferrous Trends—Copper and brass stockpiles are dwindling, as consumers live off their inventories. Ninety days ago, 9 per cent of the respondents had supplies ranging from three to six months. None has inventories that large now, although 76 per cent still have more than a month's supply. In aluminum, the percentage of buyers reporting 30 to 60 day stocks has grown from 38 to 56.

Higher than desired inventories are reported for these products: Hot-rolled carbon bars, over 1 in. (12 per cent have too many); cold-rolled sheets and strip (9 per cent); light plates (8 per cent); hot-rolled sheets and strip (7 per cent); hot-rolled carbon bars, under 1 in. (6 per cent); heavy plates (6 per cent).

Forecast — Fifty-nine per cent of the purchasing agents say their inventories won't change during the next three months; 34 per cent expect them to drop; and 7 per cent say they'll increase. Mill product salesmen may find some encouragement in the comment of a Great Lakes shipbuilder: "Inventory will rise steadily for about six months as mill deliveries pick up."

Sheets, Strip . . .

Sheet & Strip Prices, Pages 170 & 171

Following a further dip in sheet deliveries this month, producers anticipate a definite pickup in ordering during March. The longer month will help and daily consumption, especially in the automotive industry, is expected to undergo a noticeable lift.

Presently the market is quiet. This applies not only to the tonnage grades, but to the specialties, such as electrical sheets and enameling stock. A seasonal rise in a few weeks is expected in demand for galvanized sheets for building construction and repairs.

The automakers are still holding back production of new cars in an effort to reduce unsold stocks. They are gearing their sheet purchasing directly to what a major Pittsburgh supplier calls a "hand-to-mouth" buying pattern.

There are signs at Detroit that orders for February delivery of stainless strip and carbon strip and sheets are being moved back to March. This seems most prevalent at Chrysler Corp. which has heavy inventories of cars and is planning more production cuts. The company, unofficially, indicates its flat-rolled inventories now are at the 20-day level, or higher, based on slower operations.

Chevrolet Div. of General Motors seems to be the only auto producer really active. While there are no firm orders yet, indications from purchasing agents are that this GM division will be ordering more flat-rolled tonnage this month. Elsewhere in the GM family, there are signs more parts standardization will be effected among the divisions in an effort to cut costs.

One Detroit area sheet mill reports several big customers are talking hopefully of placing orders in April. A few say they want to buy in March if business picks up at all. Ford Motor Co. buying has come to a temporary standstill following the Mercury-Edsel-Lincoln merger, but Ford purchasing agents hope they'll be in the market again by mid-February.

It's possible a pickup in defense business in the Detroit area will increase parts buying by Chrysler's Missile Div. Senator Potter (R., Mich.) last week reported that an additional $104 million from the defense budget will be allocated to Chrysler to boost work on Jupiter. Chrysler's original Jupiter contract called for expenditure of $32 million.

With facilities available at its Strip Steel Div. in Youngstown, Jones & Laughlin Steel Corp. is offering four new products to the trade: 1. Electrolytic zinc coated sheets. 2. Electrolytic zinc coated sheets, chemically treated. 3. Cold-rolled sheets, electrolytic zinc flash coated, chemically treated. 4. Hot dipped, galvanized sheets, chemically treated.

Four high permeability alloys are now available in thicknesses from 0.002-in. to 0.006-in. and in widths from 1/4 in. to 3 1/4 in. from Car-

SRH

NEW STAR in the MILLER GOLD STAR LINE

The revolutionary dc welding performance achieved by the new Miller Gold Star transformer, completely sealed, semimetallic rectifier and weld stabilized circuit is now available in the SRH models. Developed specifically to save room, the SRH is only 30 1/4" high, offers 200, 300 and 400 ampere machines ideally designed for stacking or paralleling in minimum space.

Complete particulars on the new Miller GOLD STAR SRH will be sent promptly on request.

miller ELECTRIC MANUFACTURING COMPANY, INC.
Distributed in Canada by Canadian Liquid Air Co. Ltd., Montreal • APPLETON, WISCONSIN

penter Steel Co., Reading, Pa. Strip thickness is held to plus 5 per cent by automatic x-ray gage controls. These alloys are used for electronic components, such as magnetic amplifiers in which high flux densities are required in response to low magnetizing forces.

Cuts Some Export Prices

U. S. Steel Export Co., New York, subsidiary of the U. S. Steel Corp., last week reduced export price bases on standard rails, joint bars, and tie plates, effective with shipments Jan. 25. The new prices, with freight included to New York, Philadelphia, or Baltimore, are:

Products	New Base (Net ton)	Former Base (Net ton)
Standard rails		
61 lb and over	$113.62	$118.60
Joint bars		
(100 lb)	7.155	7.84
Tie plates		
(100 lb)	6.78	7.66

Plates . . .

Plate Prices, Page 169

Producers of plates in the East are seeking business more aggressively in the Pittsburgh area as sales of heavy gage plates continue to decline. Customers are able to get favorable prices as the result of freight absorption by suppliers.

Fabricators report supply no longer presents a problem, their needs having diminished. Capital equipment builders still are holding a substantial order backlog, but new business has fallen off, and this is limiting their forward plate requirements. Demand from railroad equipment and the construction industries is at low ebb. Shipbuilding needs are holding up well.

Some plate fabricators in the Pacific Northwest report improved demand for tanks and similar fabrications since the first of the year. That contrasts with the dull demand prevailing in the closing quarter of 1957.

One interest has a number of brewery tanks under contract, reporting a fair backlog though orders in hand run to less than 100 tons each.

Chicago Bridge & Iron Co., Seattle, will fabricate six digesters, 17 by 55 feet each, totaling 350 tons, for the Sitka, Alaska, plant of the Alaska Lumber & Pulp Co. Unstated tonnages are involved in bid calls for storage tanks for air fields at Glasgow, Mont., and Moses Lake, Wash.

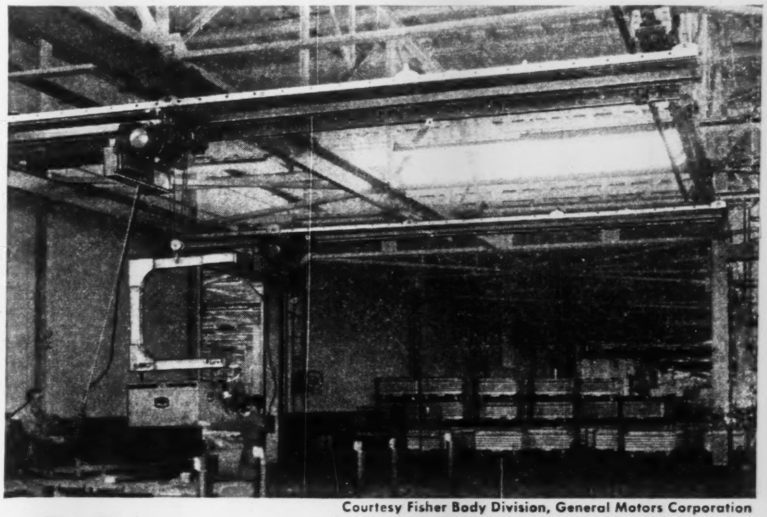
Deliveries of strip plates are running two to three weeks, sheared plates four to five weeks, and alloy plates five to six weeks.

In the East, shipyard requirements lead all others. Utility needs, such as for generators and turbines, probably come second, although there is considerable diversity in tank and pipe specifications. Railroad needs remain light.

Wire . . .

Wire Prices, Pages 171 & 172

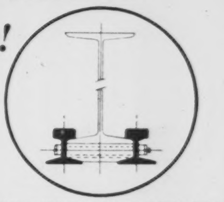
Moderate improvement in wire ordering is expected in March, though demand is now on the downgrade. A producer of manufacturers' wire at Pittsburgh thinks February will be the slowest sales



Courtesy Fisher Body Division, General Motors Corporation

92 ABELL-HOWE CRANES

for automobile body builder!



Specifically, seventy 10-ton cranes, ten 5-ton cranes and twelve 2-ton cranes . . . serving the receiving, production facilities, storage, maintenance and repair, and shipping areas in two separate plants.

The entire job was completed in good order—equipment was accepted promptly upon completion, and there have been no reported cases of malfunction.

Granted, Abell-Howe does not write orders like this every day. In fact, our business has been built on the satisfaction of single crane buyers. Point is, these cranes were purchased in *quantity* simply because Abell-Howe has the quality construction as well as the conservative price!

Abell-Howe 10-ton crane bridges at Fisher Body are specially designed with Timken bearing equipped flat tread wheels operating on 160# ASCE crane rails fastened to lower flange of I-beam runways . . . no better design for heavy service!

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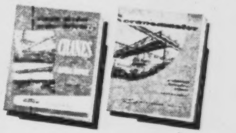


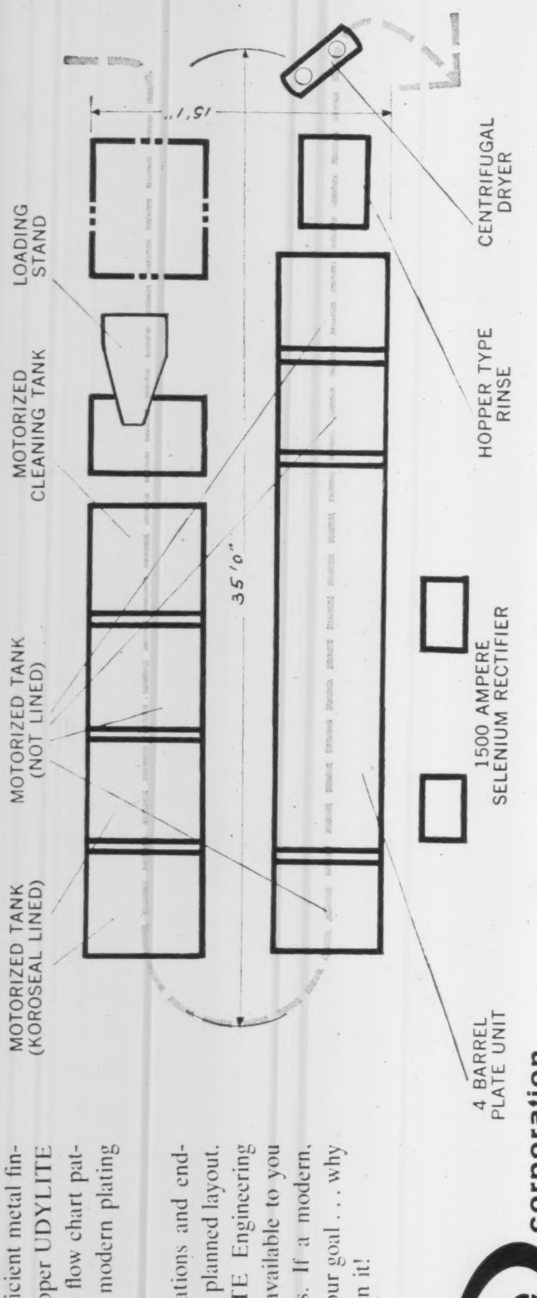
S-110 SINGLE GIRDER CRANES
Underhung and Top-Running models. Cap. 2,000 to 10,000 lbs.

C-110 CRANEMASTER CRANES
4 basic types to suit all building conditions. Cap. 3 to 20 tons.

ABELL-HOWE COMPANY *7747 W. Van Buren St. Forest Park, Ill.*

ECONOMY—EFFICIENCY—HIGH PRODUCTION

YOU GET ALL THREE FROM UDYLITE PLANNED LAYOUTS



Here is a typical alkaline or acid barrel plating plant layout designed by the UDYLITE Engineering Department for fast, efficient metal finishing. This system, with the proper UDYLITE equipment placed in a practical flow chart pattern, comprises the ultimate in modern plating production.

Naturally, different plant limitations and end-products require an individually planned layout. For this reason, the UDYLITE Engineering staff and their knowledge are available to you for your particular shop needs. If a modern, money-saving plating plant is your goal . . . why not let UDYLITE help you plan it!

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month of the first quarter. Some suppliers report orders already on books point to a sharp rise in volume during March. If demand develops as expected, March sales will be slightly better than January's.

Inventories of fabricators are generally considered at the lowest possible level. With stocks of merchant wire low, it's expected that seasonal influences will boost demand (notably for farm fence) in March and April. Gains in sales of copper-clad steel wire to utilities are expected later in the year. Their current buying is slow.

Warehousemen See Rise

Warehousemen predict a gradual rise in business this year, with an accelerating increase in the last half.

The view was expressed by C. L. Hardy, president, American Steel Warehouse Association, at a meeting in New York.

An informal poll of 15 members indicated most products handled by the warehouses slowed up markedly in November and December. Activity was down noticeably in hot-rolled bars, cold-finished bars, alloys, stainless, plates, and structurals. (Plates and structurals came into balance at the mill level recently.) One exception: Flat-rolled material has held up well since the second quarter of 1957.

Results so far this year lead the distributors to believe that steel warehouse business has bottomed out and that a slight improvement is underway. It is thought that the decline hit bottom in late November and December.

Expectations are that first half business will be 5 to 10 per cent better than that of the fourth quarter, 1957.

Warehouse . . .

Warehouse Prices, Page 174

Following a flurry of sales early in January, particularly in flat-rolled products, distributors' bookings have subsided. Demand has returned to the low level of December and is expected to remain there throughout this month.

The improvement in sales during January is attributed to the overly severe reduction in inventories effected by consumers at yearend.

Fabricators hold small stocks, considered by them to be at the optimum level. They have no incentive to accumulate additional tonnages.

With all products freely available from mills, and with some mills offering warehouse-type service in bar and pipe, an increasingly large number of small orders is going directly to mills instead of warehouses.

Some distributors look for improved business in March in line with the usual seasonal trend. Many public works and industrial construction projects are expected to develop within 60 days.

Railroad . . .

Track Material Prices, Page 172

Spain is getting some of Alaska's used locomotives. Fourteen steam units were recently loaded at Whittier, Alaska, for delivery at a port in northern Spain for the Northern Spain Railways Co. of Langres. Sale of the used equipment was made by the General Services Administration for the Alaska Railroad which has dieselized its equipment. The Alaska road has converted one steam unit for emergency standby service. Another five steam units (class 500) have been retired and are in storage.

Steel Bars . . .

Bar Prices, Page 169

Cold-finished bar suppliers are shipping an increasing proportion of bar tonnage directly from stocks. One sales manager at Pittsburgh comments: "To get an order, we have to guarantee immediate delivery. If we don't, someone else will."

Hot-rolled bar suppliers in the Pittsburgh district are beginning to follow the same practice.

The sales outlook for February at Pittsburgh is for a further dip in demand. During January, a few flurries were experienced that gave some sparkle to the market at times, but flurries are lacking now. February is expected to be the slowest month of the first quarter.

Consumers of hot bars in the East have little difficulty obtaining shipments within two or three weeks. By shopping around, they

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Steel deck. Oak end and side racks.

CUSTOM-BUILT and quality-built for long-time, low-cost service. Flat steel wheels, solid rubber or pneumatic tires. Fifth-wheel or four-wheel knuckle steer. Steel or wood deck, or special superstructure. Any desired capacity.

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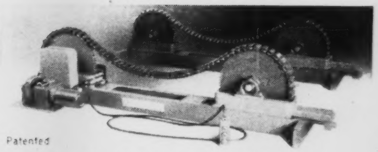

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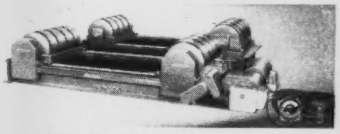
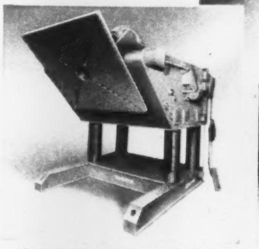
Aronson TracTred (T M Reg) Turning Rolls for thin walled heavy cylindrical work to 27 tons capacity Zero to 100 IMP turning speed and Built-In Grounding.

Aronson Universal Balance Positioners (T M Reg) position your weldments effectively, instantly for downhand welding. Capacities to 2000 lbs.

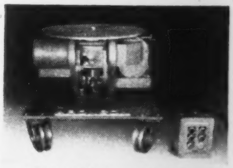
Patented



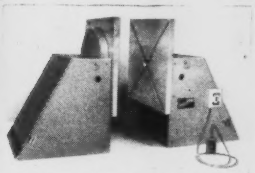
Heavy Duty Precision Built Rubber and Steel Tired Turning and Pipe Rolls. 100% overload protected Capacities to 600 Tons.



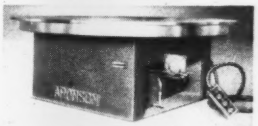
Fully Automatic Gear Driven Positioners, featuring Geared Elevation, 135° Tilting and Variable or Constant Speed Rotation. Capacities to 350,000 lbs.



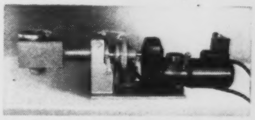
Model D Gear Driven Positioners. Compact. Precise. Rugged Capacities to 1000 lbs.



Rugged Head and Tail Stock for positioning bulky weldments between centers. Table Backup for Zero Deflection, Magnetic Braking. Capacities to 160,000 lbs. Geared Elevation Optional.



Heavy Duty Floor Turntables with precision speed control and Magnetic Braking, used for welding, burning, X-raying, etc. Capacities to 120,000 lbs., various heights and speeds.



Bench Turntable Automatic Positioners with Mercury Grounding. Capacities to 500 lbs.

Quality POSITIONERS by Aronson MACHINE COMPANY
ARCADE, NEW YORK

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New York State
water meets every
industrial need

Quantity: Water is available throughout the State in great abundance . . . from surface waterways, ground water sources and municipal water supplies.

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Before you decide on a new plant site, what water data do you need?

- Mineral and organic content?
- Total hardness and pH?
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The New York State Department of Commerce has this information immediately available, and stands ready with a professional, long-experienced staff to give you a tailor-made survey of the industrial water supply in any New York State community. Or—given your water needs—tell you the best State locations to meet those needs.

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But water is only one of your factors. What about

... markets and transportation
... labor ... components and raw materials ... sites and buildings
... power ... fuel ... financing?

Let us answer your questions. Write for "Industrial Location Services," a free booklet that tells what we can do for you. Send your request to me at Room 678, 112 State Street, Albany 7.

Edward T. Dickinson

EDWARD T. DICKINSON
Commissioner of Commerce

can find a mill that will meet their shipment dates. Some sellers expect improved specifications on automotive account in March. Also, some sellers note slightly heavier buying by warehouses currently.

On the West Coast, demand for bars on automotive account is spotty. Fabricators in the area are demanding quick deliveries. Mill order backlogs in the Pacific Northwest, particularly reinforcing bars, are improving. Placing of orders for considerable reinforcing steel for highway projects in Oregon and Washington is expected shortly.

Tubular Goods . . .

Tubular Goods Prices, Page 173

Signs of a second quarter pickup are appearing in demand for oil country tubes. In early January, interest in drill pipe, casing, and tubing had fallen. But within the past week, inquiries have gained, though they are not backed up by large volume orders.

Several major consumers indicate they will return to the market for good volume in the second quarter. These firms trimmed their buying drastically the last three months.

A major oil country goods supplier states: "We're rounding out the bottom of the market now, and it should start doing better soon."

The situation in line pipe is not so promising. Several pipeline projects have been set back, but they may be reinstated when the general level of business improves.

Pressure tubing is in fairly strong demand, with some of the larger users re-entering the market after cutting down purchases in December and January.

Mechanical tubing trade is dormant. Warehouse buying is particularly slow.

The award of 850 tons of 4 to 16 in. cast iron pipe for a Seattle improvement has been delayed due to a bid error, but action will be taken soon. Bellingham, Wash., has placed 225 tons of 6 to 10 in. cast pipe. A major project is planned at Hoquiam, Wash. If cast iron pipe is selected, about 1000 tons will be required. Alternative bids are invited Feb. 3.

Pig Iron . . .

Pig Iron Prices, Page 174

A pending upward revision in freight rates of 40 cents a ton on pig iron resulted in a modest flurry of protective buying late in January. The advance, originally scheduled to become effective Feb. 1, has been postponed until Feb. 15. The 40-cent increase applies to all rail shipments, regardless of mileage.

Merchant iron consumption is light and generally unchanged from the level recorded for several weeks. Foundries are still operating only three or four days a week. At the rate new orders for castings are being received, they have no incentive to buy beyond immediate needs.

One of the weak spots in the foundry business in Buffalo and other districts has been a decline in buying of castings by railroad equipment builders. Foundries supplying the automotive industry also are working at lower schedules than they did a year ago.

Iron Ore . . .

Iron Ore Prices, Page 175

Jones & Laughlin Steel Corp., Pittsburgh, has purchased about 300 acres in Wisconsin and is leasing 1720 acres as a part of its iron ore reserve program. The company has no plans for immediate development of the acreage.

The lands are in Iron and Ashland counties. They were optioned by J&L for exploration work in 1954 and 1956. Geologic and geophysical studies and diamond drilling have confirmed the presence of economic quantities of magnetic iron formation, or taconite, which can be recovered by open pit mining.

J&L operates ore mines in Minnesota, Michigan, and New York.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 175

Additional cuts in employment have been announced by U. S. Steel's Tennessee Coal & Iron Div., Birmingham. They are in the Coal Mines Div. For several months, its employment has held steady, while the mills were laying off people.

The company announced that it

Safety-Engineered
for superior service...

U-W GOLD CLIPS

- Designed for rugged duty
- Wide range of sizes from 1/8" to 1 1/4"
- Conveniently packaged

The Gold Clip, an important addition to Upson-Walton's complete line of highest quality wire rope fittings, is setting a new standard for rugged, dependable service. U-bolt gold-chromate coated after galvanizing, your identification of top quality. All *Gold-Clips* are drop-forged from high grade forging steel.

Available from stock in 1/8" through 1 1/4" sizes. Convenient packaging simplifies handling. See your nearby Upson-Walton distributor or write for complete details. The Upson-Walton Co., 12545 Elmwood Avenue, Cleveland 11, Ohio.

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SINCE 1871

Manufacturers of WIRE ROPE • ROPE FITTINGS • TACKLE BLOCKS • CRANE HOOK BLOCKS

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has been supplying industry outside the Birmingham District with coke for several weeks. That has been filled; and reduction in coal production will balance the division's operations and stablize employment.

Canada . . .

Canadian pig iron production showed a gain in the first 11 months of 1957, but output of ingots and steel for castings showed a decline. Pig iron and steel production are expected to decline over the next several months.

Structural Shapes . . .

Structural Shape Prices, Page 169

Fabricated structural steel orders last year amounted to 2,780,645 tons, a decline of 31 per cent from the record set in 1956, reports the American Institute of Steel Construction. Shipments hit a new high at 3,651,973 tons, topping the previous record (set in 1956) by 14 per cent.

December bookings at 126,979 tons were 69 per cent below the near record level in December, 1956. Shipments of 278,178 tons in the month were 7 per cent below the corresponding 1956 month's.

The fabricating industry's backlog at the close of 1957 amounted to 2,395,009 tons. This reserve was 7 per cent below the total reported in the preceding month. Over 1,125,000 tons are scheduled for fabrication through April.

Structural steel inquiry is a little livelier than it was. Bids on more than 11,000 tons of New York State bridge work were closed during the past week. Pending work includes 4200 tons for the New York Transit Authority and an estimated 4000 tons for a state hospital on Ward's Island, New York.

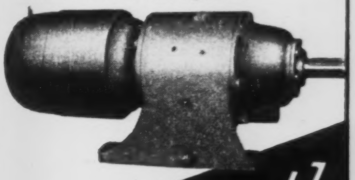
Most structural fabricators expect a gradual pickup in business from now into the spring. Volume, though, is likely to continue under that of a year ago.

Two major structural awards, in excess of 7000 tons, were placed with Seattle fabricators last week. They included 4000 to 6000 tons, including piling, to Isaacson Iron Works for the Alaska Lumber & Pulp Co.'s plant at Sitka, Alaska, and 3000 to 4000 tons to the Pacific Car & Foundry Co. for gates,

D.O. James
GEARMOTORS

RIGHT ANGLE GEARMOTOR—Horizontal or Vertical Drive, 8 sizes, ratio 6:1 to 100:1, 1/3 to 30 horsepower.

IN-LINE GEARMOTOR—Horizontal or Vertical Drive, 37 sizes, ratio 9.2:1 to 1200:1, 1 to 75 horsepower.



OUR 70th YEAR

THE D.O.James Gearmotors are of the same construction and high quality as the individual Gear Speed Reducers which we have been producing for so many years.

They cover a very wide range of ratios, horsepowers, and are an ideal, compact, efficient unit for many power and space-saving installations. They are designed and built by an organization that has been engaged in the manufacture of Gears for 70 years and that has successfully pioneered the Gear Speed Reducer to its present-day high standards.

D.O. JAMES
GEAR MANUFACTURING CO.
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MAKERS OF EVERY TYPE OF GEAR AND GEAR SPEED REDUCER

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trash racks, and other equipment for the Rocky Reach, Columbia River power project, for the Chelan County PUD. In both cases, designs are incomplete and exact tonnages are not known.

The American Institute of Steel Construction in a report to architects and engineers says structural steel is readily available and building steel can be delivered when it is required. This situation results from a 29 per cent increase in shipments of plain material to steel fabricating plants and sizable expansion in capacity of the structural fabricating industry.

Nearly $1 billion a year have been spent by the steel industry for plant expansion during the last six years. Bethlehem Steel is now able to roll at least 800,000 more tons of structural shapes annually than it produced in 1956. Last year, for the first time in its history, Inland Steel Co. started to produce wide-flange shapes—it is now rolling at an annual rate of 300,000 tons and plans to double that tonnage this year.

U. S. Steel is completing modernization of its rolling mills and other finishing processes which will enable it to appreciably increase its output of structurals in 1958. Kaiser Steel and Jones & Laughlin are also stepping up their structural capacities.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

4000 tons, including steel piling, plant for the Alaska Lumber & Pulp Co., Sitka, Alaska, to Isaacson Iron Works, Seattle; Howard S. Wright & Co. Inc., Seattle, general contractor.

3000 tons, gates, trash racks, etc., Rocky Reach power project, near Wenatchee, Wash., to the Pacific Car & Foundry Co., Seattle.

1100 tons, apartment, 48th Street and Second Avenue, New York, through Seymour Kemmel to the Grand Iron Works, New York.

1100 tons, Octillo steam electric station, Phoenix, Ariz., to the Combustion Engineering Corp., New York, to the Allison Steel Mfg. Co., Phoenix, Ariz.

700 tons, hospital, Rockaway Beach, Long Island, N. Y., through Gerace & Castagna Inc., to the Central Structural Steel Co., New York.

610 tons, tower work, Connecticut Light & Power Co., Norwalk, Conn., to the Bethlehem Steel Co., Bethlehem, Pa.

600 tons, plant, Mt. Holly Springs, Pa., through Peter Schwartzen Chweitzer Inc., to the Keystone Structural Steel Co.

370 tons, Memorial Hospital, Manchester, Conn., through Waddems & May Co., to the Standard Structural Steel Co., Hartford, Conn.

340 tons, shopping center, Milford, Conn., through the Atlas-Milford Co., to Simon Holland & Son Inc., Brooklyn.

300 tons, Yamhill River Bridge, Oregon, reported placed with the Gate City Iron Works, Boise, Idaho.

230 tons, Sandy River Bridge, Oregon, reported placed with Poole, McGonigle & Dick, Portland, Oreg.

110 tons, J. C. Penney store building, Bellevue, Wash., to Leckenby Structural Steel Co., Seattle.

100 tons, junior high school, Everett, Wash., to unstated fabricator; Newland Construction Co., Everett, general contractor.

100 tons, aprons for Washington state ferry terminals, to Leckenby Structural Steel Co., Seattle.

STRUCTURAL STEEL PENDING

4000 tons, estimated, hospital, New York State Department of Public Works, Wards Island, New York; bids Feb. 20.

800 tons, state bridges, Baltimore County, Maryland; bids closed.

790 tons, state bridge work, Roosevelt Boulevard, Philadelphia, Buckley Co., that city, low on general contract; project also requires 1250 tons of reinforcing bars.

500 tons, office and garage, National Bank of Commerce, Seattle; bids taken within 30 days.

500 tons, public school, Whitehall Township, Pennsylvania, Stofflet & Tilotson, Philadelphia, low on general contract.

150 tons, state bridge, Northumberland County, Pennsylvania, J. Paul Laubaugh, Benton, Pa., low on general contract.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1040 tons, added facilities, Maguire Air Base, near Trenton, N. J., U. S. Army, divided equally between Sweet's Steel Co., Williamsport, Pa., and West Virginia Steel & Mfg. Co., Huntington, W. Va.

500 tons or more, Sitka, Alaska, pulp plant of the Alaska Lumber & Pulp Co., Seattle, to unstated Japanese interest.

435 tons, state bridge work, Route 108, Sections 1-A and 2-D, Camden County, New Jersey, through Public Construction Co., general contractor, to American Steel Engineering Co., Philadelphia.

REINFORCING BARS PENDING

1250 tons, state bridge work, Roosevelt Boulevard, Philadelphia, Buckley Co., that city, low on general contract; project also requires 790 tons of shapes.

700 tons, U. S. Engineers, San Francisco.

300 tons, state bridge work, Washington, Lafayette, and Westmoreland counties, Pennsylvania; bids Feb. 21.

225 tons, two bridges, Thurston County, Washington; general contract to Fiorito Bros. Inc., Seattle, low at $1,184,881.

130 tons, bridge, James River, Blue Ridge Parkway, Amherst-Bedford counties, Virginia.

125 tons, Washington state projects, Whitman and Clark counties; bids to Olympia, Wash., Feb. 4.

100 tons or more, Washington state garage, Olympia, Wash.; general contract to H. Halvorson Inc., Seattle, low at $245,817.

PLATES . . .

PLATES PLACED

350 tons, six digesters for Sitka, Alaska, plant of the Alaska Lumber & Pulp Co., to the Chicago Bridge & Iron Co., Seattle.

PLATES PENDING

100 tons or more, 55,000-bbl bulk storage tank, pumphouse, and 43,000 ft of piping, fuel system, Larsen Field, Moses Lake, Wash.; bids to the U. S. Engineer, Walla Walla, Wash., to be invited Jan. 30.

PIPE . . .

CAST IRON PIPE PLACED

225 tons, 6 to 10 in. mains, local improvement, Bellingham, Wash., to the Pacific States Cast Iron Pipe Co., Seattle.

CAST IRON PIPE PENDING

1000 tons (if cast iron), system improvement at Hoquiam, Wash.; alternative bids invited Feb. 3.

Handling Coil Stock?

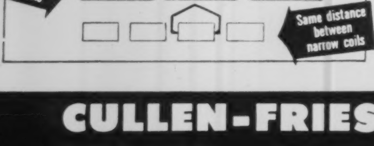
CHECK THESE

C-F LIFTER

ADVANTAGES

- 1 Lifter handles wide range of coil sizes
- Requires minimum of only 10" to 12" between piles —saves storage room
- 1 man operation — eliminates hookers
- Positive grip on coil — no damage to material

• C-F Coil Lifters are saving time and labor in many plants and warehouses because they can pick up, carry and set down a coil of steel faster and safer than any other method. Infinite jaw openings permit handling a very wide range of coil widths . . . carrying legs open fast, stay open until operator closes them on coil. Narrow legs require minimum space between piles – a space saving advantage. Made in motorized models for crane cab or pendant operation as well as manual types with chain wheel, in capacities from 3 tons up. Powered Rotating Heads available. Opening ranges to suit your requirements. Write for illustrated Bulletin.


Requires minimum space in handling wide or narrow coils
12" max. between wide coils
Same distance between narrow coils

CULLEN-FRIESTEDT CO.

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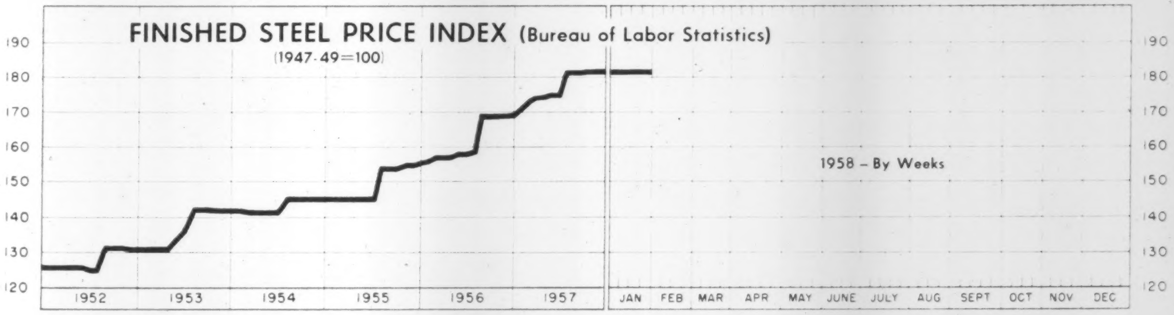
Price Indexes and Composites



Jan. 28, 1958	Week Ago	Month Ago	Jan. Avg.	Year Ago
181.7	**181.7**	**181.7**	**181.7**	**171.1**

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Jan. 28

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.600
Rails, Light, 40 lb	7.067
Tie Plates	6.600
Axles, Railway	9.825
Wheels, Freight Car, 33 in. (per wheel)	60.000
Plates, Carbon	6.150
Structural Shapes	5.942
Bars, Tool Steel, Carbon (lb)	0.535
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.650
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.355
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.850
Bars, H.R., Alloy	10.525
Bars, H.R., Stainless, 303 (lb)	0.525
Bars, H.R., Carbon	6.425
Bars, Reinforcing	6.210
Bars, C.F., Carbon	10.360
Bars, C.F., Alloy	13.875
Bars, C.F., Stainless, 302 (lb)	0.553
Sheets, H.R., Carbon	6.192
Sheets, C.R., Carbon	7.089
Sheets, Galvanized	8.220
Sheets, C.R., Stainless, 302 (lb)	0.688
Sheets, Electrical	12.025
Strip, C.R., Carbon	9.243
Strip, C.R., Stainless, 430 (lb)	0.493
Strip, H.R., Carbon	6.245
Pipe, Black, Buttweld (100 ft)	19.814
Pipe, Galv., Buttweld (100 ft)	23.264
Pipe, Line (100 ft)	199.023
Casing, Oil Well, Carbon (100 ft)	194.499
Casing, Oil Well, Alloy (100 ft)	304.610
Tubes, Boiler (100 ft)	49.130
Tubing, Mechanical, Carbon (100 ft)	24.953
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.783
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.483
Black Plate, Canmaking Quality (95 lb base box)	7.583
Wire, Drawn, Carbon	10.225
Wire, Drawn, Stainless, 430 (lb)	0.653
Bale Ties (bundles)	7.967
Nails, Wire, 8d Common	9.828
Wire, Barbed (80-rod spool)	8.719
Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	Jan. 29 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	239.15	239.15	239.15	225.92	181.31
Index in cents per lb	6.479	6.479	6.479	6.111	4.912

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$145.42	$145.42	$145.42	$137.98	$110.98
No. 2 Fdry Pig Iron, GT	66.49	66.49	66.49	62.63	55.04
Basic Pig Iron, GT	65.99	65.99	65.99	62.18	54.66
Malleable Pig Iron, GT	67.27	67.27	67.27	63.41	55.77
Steelmaking Scrap, GT	35.50	34.25	33.17	56.00	43.00

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*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

	Jan. 29 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.425	5.425	5.425	5.075	3.95
Bars, H.R., Chicago	5.425	5.425	5.425	5.075	3.95
Bars, H.R., deld., Philadelphia	5.725	5.725	5.725	5.365	4.502
Bars, C.F., Pittsburgh	7.30*	7.30*	7.30*	6.85*	4.925
Shapes, Std., Pittsburgh	5.275	5.275	5.275	5.00	3.85
Shapes, Std., Chicago	5.275	5.275	5.275	5.00	3.85
Shapes, deld., Philadelphia	5.545	5.545	5.545	5.31	4.13
Plates, Pittsburgh	5.10	5.10	5.10	4.85	3.90
Plates, Chicago	5.10	5.10	5.10	4.85	3.90
Plates, Coatesville, Pa.	5.10	5.10	5.10	5.25	4.35
Plates, Sparrows Point, Md.	5.10	5.10	5.10	4.85	3.90
Plates, Claymont, Del.	5.10	5.10	5.10	5.70	4.35
Sheets, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.775
Sheets, H.R., Chicago	4.925	4.925	4.925	4.675	3.775
Sheets, C.R., Pittsburgh	6.05	6.05	6.05	5.75	4.575
Sheets, C.R., Chicago	6.05	6.05	6.05	5.75	4.575
Sheets, C.R., Detroit	6.05-6.15	6.05-6.15	6.05-6.15	5.75-5.85	4.775
Sheets, Galv., Pittsburgh	6.60	6.60	6.60	6.30	5.075
Strip, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.975-4.225
Strip, H.R., Chicago	4.925	4.925	4.925	4.675	3.725
Strip, C.R., Pittsburgh	7.15	7.15	7.15	6.85	5.10-5.80
Strip, C.R., Chicago	7.15	7.15	7.15	6.85	5.35
Strip, C.R., Detroit	7.25	7.25	7.25	6.95	5.30-6.05
Wire, Basic, Pittsburgh	7.65	7.65	7.65	7.20	5.475-5.225
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.20	6.35
Tin plate (1.50 lb) box, Pitts.	$10.30	$10.30	$10.30	$9.95	$8.95

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*Including 0.35c for special quality.

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	$96.00	$96.00	$96.00	$91.50	$70.50
Wire rods, $\frac{7}{32}$-$\frac{5}{8}$" Pitts.	6.15	6.15	6.15	5.80	4.425

PIG IRON, Gross Ton

	Jan. 29 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$63.50	$55.50
Basic, Valley	66.00	66.00	66.00	62.50	54.50
Basic, deld., Phila.	70.01	70.01	70.01	66.26	59.25
No. 2 Fdry,NevilleIsland,Pa.	66.50	66.50	66.50	63.00	55.00
No. 2 Fdry, Chicago	66.50	66.50	66.50	63.00	55.00
No. 2 Fdry, deld., Phila.	70.51	70.51	70.51	66.76	59.75
No. 2 Fdry, Birm.	62.50	62.50	62.50	59.00	51.38
No. 2 Fdry(Birm.)deld.Cin.	70.20	70.20	70.20	66.70	58.93
Malleable, Valley	66.50	66.50	66.50	63.00	55.00
Malleable, Chicago	66.50	66.50	66.50	63.00	55.00
Ferromanganese, Duquesne	245.00†	245.00†	245.00†	255.00†	228.00*

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†74-76% Mn, net ton. *75-82% Mn, gross ton, Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)

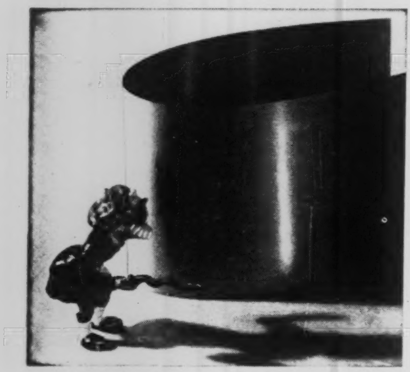
No. 1 Heavy Melt, Pittsburgh	$33.50	$32.50	$31.50	$54.50	$44.00
No. 1 Heavy Melt, E. Pa.	38.50	37.75	37.00	59.00	41.50
No. 1 Heavy Melt, Chicago	34.50	32.50	31.00	54.50	42.50
No. 1 Heavy Melt, Valley	30.50	30.50	29.50	56.50	44.00
No. 1 Heavy Melt, Cleve.	29.50	27.50	26.50	53.50	43.00
No. 1 Heavy Melt, Buffalo	28.50	28.50	30.50	59.50	43.00
Rails, Rerolling Chicago	53.50	50.50	49.50	71.50	52.50
No. 1 Cast, Chicago	42.50	39.50	39.50	48.50	43.00

COKE, Net Ton

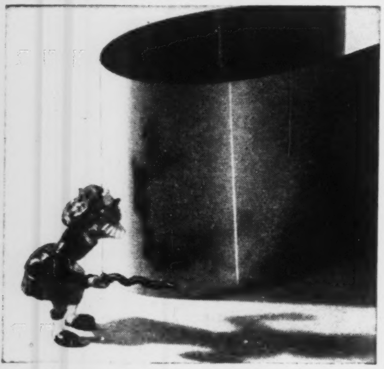
Beehive, Furn., Connlsvl.	$15.25	$15.25	$15.25	$15.00	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.00	17.00

No matter which FINISH you like—you can buy it in

MicroRold® QUALITY STAINLESS STEEL

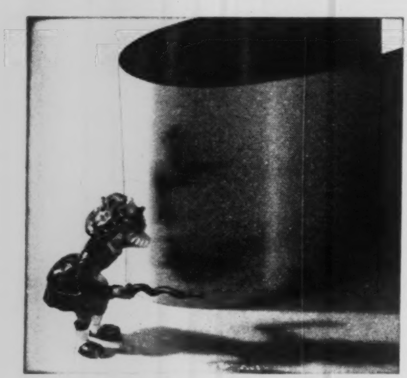


2D—A silvery white, but non-lustrous, surface produced by annealing and pickling cold reduced material. Steel sheets & strip in this condition are most ductile and the surface holds lubricant well for severe drawing operations.

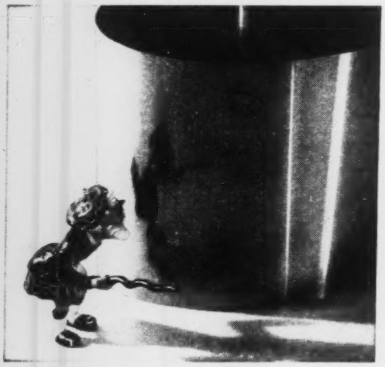


2B—Steel in the 2D condition which is subsequently rolled on a "skin pass" or temper mill. The surface acquires a bright finish from the polished rolls. This surface is somewhat more dense and hard than 2D and is a better starting surface for later finishing and buffing operations.

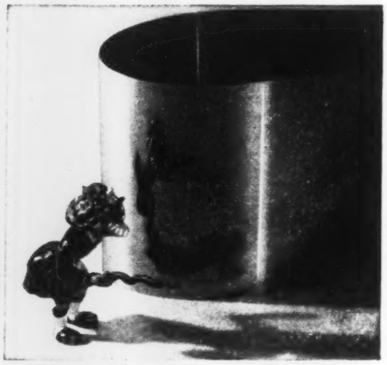
No. 3—This surface is made by grinding with a No. 100 abrasive. This surface is smooth but not as reflective as 2B.



No. 4—A finer finish than No. 3 made by grinding with a No. 150 abrasive. Like No. 3, this surface is easily blended with hand grinders after forming, drawing or welding.



No. 7—Good reflectivity and brilliance made by polishing with a No. 400 abrasive. This semi-mirror finish must be protected during fabrication by adhesive paper or strippable plastics lest the finish be marred beyond repair.



BRIGHT—A highly reflective surface made by cold reducing with highly polished, glass-hard rolls. This finish is only available in Type 430 stainless.

These are our standard surface finishes that are available in types 201, 202, 301, 302, 304 and 430 except Bright which is type 430 exclusively.

These finishes are regularly supplied in sheet and coil form in widths up to 48 inches.

Since Nos. 3, 4, 7 and 430 Bright are smooth reflective surfaces, they are not recommended for severe drawing without special precautions as the mill finish may be marred. Applications such as dairy machinery, kitchen and restaurant equipment and architectural decorative work require only local forming, so these highly polished surfaces are not greatly disturbed. All mill polished sheets are carefully packed to avoid handling imperfections. Protective adhesive paper can be specified by the buyer when needed.

For specific information on recommended surface characteristics for a particular stainless steel sheet and strip application, address your request to our Product Development Dept.

Washington Steel Corporation

Producers of Stainless Sheet and Strip Exclusively

21-0 WOODLAND AVENUE, WASHINGTON, PA.

Steel Prices

Mill prices as reported to STEEL, Jan. 29, cents per pound except as otherwise noted. *Changes shown in italics.* Code numbers following mill points indicate producing company. Key to producers, page 170; to footnotes, page 172.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)

Munhall,Pa. U5	$73.50

INGOTS, Alloy (NT)

Detroit S41	$77.00
Farrell,Pa. S3	77.00
Lowellville,O. S3	77.00
Midland,Pa. C18	77.00
Munhall,Pa. U5	77.00
Sharon,Pa. S3	77.00

BILLETS, BLOOMS & SLABS

Carbon, Rerolling (NT)

Bessemer,Pa. U5	$77.50
Buffalo R2	77.50
Clairton,Pa. U5	77.50
Ensley,Ala. T2	77.50
Fairfield,Ala. T2	77.50
Fontana,Calif. K1	88.00
Gary,Ind. U5	77.50
Johnstown,Pa. B3	77.50
Lackawanna,N.Y. B2	77.50
Munhall,Pa. U5	77.50
S.Chicago,Ill. R2, U5	77.50
S.Duquesne,Pa. U5	77.50
Sterling,Ill. N15	77.50
Youngstown R2	77.50

Carbon, Forging (NT)

Bessemer,Pa. U5	$96.00
Buffalo R2	96.00
Canton,O. R2	98.50
Clairton,Pa. U5	96.00
Conshohocken,Pa. A3	101.00
Ensley,Ala. T2	96.00
Fairfield,Ala. T2	96.00
Fontana,Calif. K1	105.50
Gary,Ind. U5	96.00
Geneva,Utah C11	96.00
Houston S5	101.00
Johnstown,Pa. B2	96.00
Lackawanna,N.Y. B2	96.00
LosAngeles B3	105.50
Midland,Pa. C18	96.00
Munhall,Pa. U5	96.00
Seattle B3	109.50
Sharon,Pa. S3	96.00
S.Chicago R2, U5, W14	96.00
S.Duquesne,Pa. U5	96.00
S.SanFrancisco B3	105.50
Warren,O. C17	96.00

Alloy, Forging (NT)

Bethlehem,Pa. B2	$114.00
Bridgeport,Conn. C32	114.00
Buffalo R2	114.00
Canton,O. R2, T7	114.00
Conshohocken,Pa. A3	121.00
Detroit S41	114.00
Economy,Pa. B14	114.00
Farrell,Pa. S3	114.00
Fontana,Calif. K1	135.00
Gary,Ind. U5	114.00
Houston S5	119.00
Ind.Harbor,Ind. Y1	114.00
Johnstown,Pa. B2	114.00
Lackawanna,N.Y. B2	114.00
Los Angeles B3	134.00
Lowellville,O. S3	114.00
Massillon,O. R2	114.00
Midland,Pa. C18	114.00
Munhall,Pa. U5	114.00
Sharon,Pa. S3	114.00
S.Chicago R2,U5,W14	114.00
S.Duquesne,Pa. U5	114.00
Struthers,O. Y1	114.00
Warren,O. C17	114.00

ROUNDS, SEAMLESS TUBE (NT)

Buffalo R2	$117.50
Canton,O. R2	120.00
Cleveland R2	117.50
Gary,Ind. U5	117.50
S.Chicago,Ill. R2, W14	117.50
S.Duquesne,Pa. U5	117.50
Warren,O. C17	117.50

SKELP

Aliquippa,Pa. J5	5.075
Munhall,Pa. U5	4.875
Warren,O. R2	4.875
Youngstown R2, U5	4.875

WIRE RODS

AlabamaCity,Ala. R2	6.15
Aliquippa,Pa. J5	6.15
Alton,Ill. L1	6.35
Buffalo W12	6.15
Cleveland A7	6.15
Donora,Pa. A7	6.15
Fairfield,Ala. T2	6.15
Houston S5	6.40
IndianaHarbor,Ind. Y1	6.15
Johnstown,Pa. B2	6.15
Joliet,Ill. A7	6.15
KansasCity,Mo. S5	6.40
Kokomo,Ind. C16	6.25
LosAngeles B3	6.95
Minnequa,Colo. C10	6.40
Monessen,Pa. P7	6.15
N.Tonawanda,N.Y. B11	6.15
Pittsburg,Calif. C11	6.95
Portsmouth,O. P12	6.15
Roebling,N.J. R5	6.25
S.Chicago,Ill. R2	6.15
SparrowsPoint,Md. B2	6.25
Sterling,Ill. (1) N15	6.15
Sterling,Ill. N15	6.25
Struthers,O. Y1	6.15
Worcester,Mass. A7	6.45

STRUCTURALS

Carbon Steel Std. Shapes

Ala.City,Ala. R2	5.275
Atlanta A11	5.475
Aliquippa,Pa. J5	5.275
Bessemer,Ala. T2	5.275
Bethlehem,Pa. B2	5.325
Birmingham C15	5.275
Clairton,Pa. U5	5.275
Fairfield,Ala. T2	5.275
Fontana,Calif. K1	6.075
Gary,Ind. U5	5.275
Geneva,Utah C11	5.275
Houston S5	5.375
Ind.Harbor,Ind. I-2	5.275
Johnstown,Pa. B2	5.325
Joliet,Ill. P22	5.275
KansasCity,Mo. S5	5.375
Lackawanna,N.Y. B2	5.325
LosAngeles B3	5.975
Minnequa,Colo. C10	5.575
Munhall,Pa. U5	5.275
Niles,Calif. P1	5.925
Phoenixville,Pa. P4	5.325
Portland,Oreg. O4	6.025
Seattle B3	6.025
S.Chicago,Ill. U5, W14	5.275
S.SanFrancisco B3	5.925
Sterling,Ill. N15	5.275
Torrance,Calif. C11	5.975
Weirton,W.Va. W6	5.275

Wide Flange

Bethlehem,Pa. B2	5.325
Clairton,Pa. U5	5.275
Fontana,Calif. K1	6.225
IndianaHarbor,Ind. I-2	5.275
Lackawanna,N.Y. B2	5.325
Munhall,Pa. U5	5.275
Phoenixville,Pa. P4	5.325
S.Chicago,Ill. U5	5.275

Alloy Std. Shapes

Aliquippa,Pa. J5	6.55
Clairton,Pa. U5	6.55
Gary,Ind. U5	6.55
Houston S5	6.65
KansasCity,Mo. S5	6.65
Munhall,Pa. U5	6.55
S.Chicago,Ill. U5	6.55

H.S., L.A. Std. Shapes

Aliquippa,Pa. J5	7.75
Bessemer,Ala. T2	7.75
Bethlehem,Pa. B2	7.80
Clairton,Pa. U5	7.75
Fairfield,Ala. T2	7.75
Fontana,Calif. K1	8.55
Gary,Ind. U5	7.75
Geneva,Utah C11	7.75
Houston S5	7.85
Ind.Harbor,Ind. I-2, Y1	7.75
Johnstown,Pa. B2	7.80
KansasCity,Mo. S5	7.85
Lackawanna,N.Y. B2	7.80
LosAngeles B3	8.45
Munhall,Pa. U5	7.75
Seattle B3	8.50
S.Chicago,Ill. U5, W14	7.75
S.SanFrancisco B3	8.40
Struthers,O. Y1	7.75

H.S., L.A. Wide Flange

Bethlehem,Pa. B2	7.80
Lackawanna,N.Y. B2	7.80
Munhall,Pa. U5	7.75
S.Chicago,Ill. U5	7.75

PILING

BEARING PILES

Bethlehem,Pa. B2	5.325
Lackawanna,N.Y. B2	5.325
Munhall,Pa. U5	5.275
S.Chicago,Ill. U5	5.275

STEEL SHEET PILING

Lackawanna,N.Y. B2	6.225
Munhall,Pa. U5	6.225
S.Chicago,Ill. U5	6.225
Weirton,W.Va. W6	6.225

PLATES

PLATES, Carbon Steel

Ala.City,Ala. R2	5.10
Aliquippa,Pa. J5	5.10
Ashland,Ky. (15) A10	5.10
Bessemer,Ala. T2	5.10
Clairton,Pa. U5	5.10
Claymont,Del. C22	5.10
Cleveland J5, R2	5.20
Coatesville,Pa. L7	5.10
Conshohocken,Pa. A3	5.20
Ecorse,Mich. G5	5.20
Fairfield,Ala. T2	5.10
Fontana,Calif.(30) K1	5.90
Gary,Ind. U5	5.10
Geneva,Utah C11	5.10
GraniteCity,Ill. G4	5.30
Harrisburg,Pa. P4	5.10
Houston S5	5.20
Ind.Harbor,Ind. I-2, Y1	5.10
Johnstown,Pa. B2	5.10
Lackawanna,N.Y. B2	5.10
LoneStar,Tex. L6	*5.20*
Mansfield,O. E6	5.10
Minnequa,Colo. C10	5.95
Munhall,Pa. U5	5.10
Newport,Ky. A2	5.10
Pittsburgh J5	5.10
Riverdale,Ill. A1	5.10
Seattle B3	6.00
Sharon,Pa. S3	5.10
S.Chicago,Ill. U5, W14	5.10
SparrowsPoint,Md. B2	5.10
Sterling,Ill. N15	5.10
Steubenville,O. W10	5.10
Warren,O. R2	5.10
Youngstown U5, Y1	5.10

PLATES, Carbon Abras. Resist.

Claymont,Del. C22	6.75
Fontana,Calif. K1	7.55
Geneva,Utah C11	6.75
Houston S5	6.85
Johnstown,Pa. B2	6.75
SparrowsPoint,Md. B2	6.75

PLATES, Wrought Iron

Economy,Pa. B14	13.15

PLATES, H.S., L.A.

Aliquippa,Pa. J5	7.625
Bessemer,Ala. T2	7.625
Clairton,Pa. U5	7.625
Claymont,Del. C22	7.625
Cleveland J5, R2	7.625
Coatesville,Pa. L7	7.925
Conshohocken,Pa. A3	7.625
Economy,Pa. B14	7.625
Ecorse,Mich. G5	7.725
Fairfield,Ala. T2	7.625
Farrell,Pa. S3	7.625
Fontana,Calif.(30) K1	8.425
Gary,Ind. U5	7.625
Geneva,Utah C11	7.625
Houston S5	7.725
Ind.Harbor,Ind. I-2, Y1	7.625
Johnstown,Pa. B2	7.625
Munhall,Pa. U5	7.625
Pittsburgh J5	7.625
Seattle B3	8.525
Sharon,Pa. S3	7.625
S.Chicago,Ill. U5, W14	7.625
SparrowsPoint,Md. B2	7.625
Warren,O. R2	7.625
Youngstown U5	7.625

PLATES, ALLOY

Aliquippa,Pa. J5	7.20
Claymont,Del. C22	7.20
Coatesville,Pa. L7	7.20
Economy,Pa. B14	7.20
Farrell,Pa. S3	7.20
Fontana,Calif.(30) K1	8.00
Gary,Ind. U5	7.20
Houston S5	7.30
Ind.Harbor,Ind. Y1	7.20
Johnstown,Pa. B2	7.20
Lowellville,O. S3	7.20
Munhall,Pa. U5	7.20
Newport,Ky. A2	7.20
Pittsburgh J5	7.20
Seattle B3	8.10
Sharon,Pa. S3	7.20
S.Chicago,Ill. U5, W14	7.20
SparrowsPoint,Md. B2	7.20
Youngstown Y1	7.20

FLOOR PLATES

Cleveland J5	6.175
Conshohocken,Pa. A3	6.175
Ind.Harbor,Ind. I-2	6.175
Munhall,Pa. U5	6.175
S.Chicago,Ill. U5	6.175

PLATES, Ingot Iron

Ashland c.l. (15) A10	5.35
Ashland l.c.l. (15) A10	5.85
Cleveland c.l. R2	5.85
Warren,O. c.l. R2	5.85

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)

Ala.City,Ala.(9) R2	5.425
Aliquippa,Pa.(9) J5	5.425
Alton,Ill. L1	5.625
Atlanta(9) A11	5.625
Bessemer,Ala.(9) T2	5.425
Birmingham(9) C15	5.425
Buffalo(9) R2	5.425
Clairton,Pa.(9) U5	5.425
Cleveland(9) R2	5.425
Ecorse,Mich.(9) G5	5.525
Emeryville,Calif. J7	6.175
Fairfield,Ala.(9) T2	5.425
Fairless,Pa.(9) U5	5.575
Fontana,Calif.(9) K1	6.125
Gary,Ind.(9) U5	5.425
Houston(9) S5	5.675
Ind.Harbor(9) I-2, Y1	5.425
Johnstown,Pa.(9) B2	5.425
Joliet,Ill. P22	5.425
KansasCity,Mo.(9) S5	5.675
Lackawanna(9) B2	5.425
LosAngeles(9) B3	6.125
Milton,Pa. M18	5.575
Minnequa,Colo. C10	5.875
Niles,Calif. P1	6.125
N.T'wanda,N.Y.(23)B11	5.775
Pittsburg,Calif.(9) C11	6.125
Pittsburgh(9) J5	5.425
Portland,Oreg. O4	6.175
Seattle B3, N14	6.175
S.Ch'c'go(9)R2,U5,W14	5.425
S.Duquesne,Pa.(9) U5	5.425
S.SanFran.,Calif.(9)B3	6.175
Sterling,Ill.(1)(9) N15	5.425
Sterling,Ill.(9) N15	5.525
Struthers,O. Y1	5.425
Tonawanda,N.Y. B12	5.425
Torrance,Calif.(9) C11	6.125
Youngstown(9) R2, U5	5.425

BARS, H.R. Leaded Alloy (Including leaded extra)

Warren,O. C17	7.475

BARS, Hot-Rolled Alloy

Aliquippa,Pa. J5	6.475
Bethlehem,Pa. B2	6.475
Bridgeport,Conn. C32	6.55
Buffalo R2	6.475
Canton,O. R2, T7	6.475
Clairton,Pa. U5	6.475
Detroit S41	6.475
Economy,Pa. B14	6.475
Ecorse,Mich. G5	6.575
Fairless,Pa. U5	6.625
Farrell,Pa. S3	6.475
Fontana,Calif. K1	7.525
Gary,Ind. U5	6.475
Houston S5	6.725
Ind.Harbor Ind. I-2, Y1	6.475
Johnstown,Pa. B2	6.475
KansasCity,Mo. S5	6.725
Lackawanna,N.Y. B2	6.475
Lowellville,O. S3	6.475
LosAngeles B3	7.525
Massillon,O. R2	6.475
Midland,Pa. C18	6.475
Pittsburgh J5	6.475
Sharon,Pa. S3	6.475
S.Chicago R2, U5, W14	6.475
S.Duquesne,Pa. U5	6.475
Struthers,O. Y1	6.475
Warren,O. C17	6.475
Youngstown U5	6.475

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy

Aliquippa,Pa. J5	7.925
Bessemer,Ala. T2	7.925
Bethlehem,Pa. B2	7.925
Clairton,Pa. U5	7.925
Cleveland R2	7.925
Ecorse,Mich. G5	8.025
Fairfield,Ala. T2	7.925
Fontana,Calif. K1	8.625
Gary,Ind. U5	7.925
Houston S5	8.175
Ind.Harbor,Ind. Y1	7.925
Johnstown,Pa. B2	7.925
KansasCity,Mo. S5	8.175
Lackawanna,N.Y. B2	7.925
LosAngeles B3	8.625
Pittsburgh J5	7.925
Seattle B3	8.675
S.Chicago,Ill. U5, W14	7.925
S.Duquesne,Pa. U5	7.925
S.SanFrancisco B3	8.675
Struthers,O. Y1	7.925
Youngstown U5	7.925

BAR SIZE ANGLES; H.R. Carbon

Bethlehem,Pa.(9) B2	5.575
Houston(9) S5	5.675
KansasCity,Mo.(9) S5	5.675
Lackawanna(9) B2	5.425
Sterling,Ill. N15	5.525
Sterling,Ill.(1) N15	5.425
Tonawanda,N.Y. B12	5.425

BAR SIZE ANGLES; S. Shapes

Aliquippa,Pa. J5	5.425
Atlanta A11	5.625
Joliet,Ill. P22	5.425
Niles,Calif. P1	6.125
Pittsburgh J5	5.425
Portland,Oreg. O4	6.175
SanFrancisco S7	6.275
Seattle B3	6.175

BAR SHAPES, Hot-Rolled Alloy

Aliquippa,Pa. J5	6.55
Clairton,Pa. U5	6.55
Gary,Ind. U5	6.55
Houston S5	6.80
KansasCity,Mo. S5	6.80
Pittsburgh J5	6.55
Youngstown U5	6.55

BARS, C.F., Leaded Alloy (Including leaded extra)

Ambridge,Pa. W18	9.925
BeaverFalls,Pa. M12	9.925
Camden,N.J. P13	10.10
Chicago W18	9.25
Cleveland C20	9.925
Elyria,O. W8	9.925
LosAngeles S30	
(Grade A)	11.30
(Grade B)	11.80
LosAngeles P2	
(Grade A)	11.40
(Grade B)	11.90
Monaca,Pa. S17	9.925
Newark,N.J. W18	10.10
SpringCity,Pa. K3	10.10
Warren,O. C17	9.925

BARS, Cold-Finished Carbon

Ambridge,Pa. W18	7.30
BeaverFalls,Pa. M12,R2	7.30
Birmingham C15	7.90
Bridgeport,Conn. C32	7.65
Buffalo B5	7.35
Camden,N.J. P13	7.75
Carnegie,Pa. C12	7.30
Chicago W18	7.30
Cleveland A7, C20	7.30
Detroit B5, P17	7.50
Detroit S41	7.30
Donora,Pa. A7	7.30
Elyria,O. W8	7.30
FranklinPark,Ill. N5	7.30
Gary,Ind. R2	7.30
GreenBay,Wis. F7	7.30
Hammond,Ind. J5, L2	7.30
Hartford,Conn. R2	7.80
Harvey,Ill. B5	7.30
LosAngeles(49) S30	8.75
LosAngeles P2, R2	8.75
Mansfield,Mass. B5	7.85
Massillon O. R2, R8	7.30
Midland,Pa. C18	7.30
Monaca,Pa. S17	7.30
Newark,N.J. W18	7.75
NewCastle,Pa.(17) B4	7.30
Pittsburgh J5	7.30
Plymouth,Mich. P5	7.55
Putnam,Conn. W18	7.85
Readville,Mass. C14	7.85
S.Chicago,Ill. W14	7.30
SpringCity,Pa. K3	7.75
Struthers O. Y1	7.30
Warren,O. C17	7.30
Willimantic,Conn. J5	7.80
Waukegan,Ill. A7	7.30
Youngstown F3, Y1	7.30

BARS, Cold-Finished Carbon (Turned and Ground)

Cumberland,Md.(5) C19	6.55

BARS, Cold Finished Alloy

Ambridge,Pa. W18	8.775
BeaverFalls,Pa. M12,R2	8.775
Bethlehem,Pa. B2	8.775
Bridgeport,Conn. C32	8.925
Buffalo B5	8.775
Camden,N.J. P13	8.95
Canton,O. T7	8.775
Carnegie,Pa. C12	8.775
Chicago W18	8.775
Cleveland A7, C20	8.775
Detroit B5, P17	8.975
Detroit S41	8.775
Donora,Pa. A7	8.775
Elyria,O. W8	8.775
FranklinPark,Ill. N5	8.775
Gary,Ind. R2	8.775
GreenBay,Wis. F7	8.775
Hammond,Ind. J5, L2	8.775
Hartford,Conn. R2	9.075
Harvey Ill. B5	8.775
Lackawanna,N.Y. B2	8.775
LosAngeles P2, S30	10.75
Mansfield,Mass. B5	9.075
Massillon,O. R2, R8	8.775
Midland,Pa. C18	8.775
Monaca,Pa. S17	8.775
Newark,N.J. W18	8.95
Plymouth,Mich. P5	8.975
S.Chicago,Ill. W14	8.775
SpringCity,Pa. K3	8.95
Struthers,O. Y1	8.775
Warren,O. C17	8.775
Waukegan,Ill. A7	8.775
Worcester,Mass. A7	9.075
Youngstown F3, Y1	8.775

BARS, Reinforcing (To Fabricators)

Ala.City.Ala. R2	5.425
Atlanta A11	5.625
Birmingham C15	5.425
Buffalo R2	5.425
Cleveland R2	5.425
Ecorse.Mich. G5	5.775
Emeryville.Calif. J7	6.175
Fairfield.Ala. T2	5.425
Fairless.Pa. U5	5.575
Fontana.Calif. K1	6.125
Ft.Worth.Tex.(4)(26)T4	5.875
Gary.Ind. U5	5.425
Houston S5	5.675
Ind.Harbor.Ind. I-2, Y1	5.425
Johnstown.Pa. B2	5.425
Joliet.Ill. P22	5.425
KansasCity.Mo. S5	5.675
Lackawanna.N.Y. B2	5.425
LosAngeles B3	6.125
Milton.Pa. M18	5.575
Minnequa.Colo. C10	5.875
Niles.Calif. P1	6.125
Pittsburg.Calif. C11	6.125
Pittsburgh J5	5.425
Portland.Oreg. O4	6.175
SandSprings.Okla. S5	5.925
Seattle B3, N14	6.175
S.Chicago.Ill. R2	5.425
S.Duquesne.Pa. U5	5.425
S.SanFrancisco B3	6.175
SparrowsPoint.Md. B2	5.425
Sterling.Ill.(1) N15	5.425
Sterling.Ill. N15	5.525
Struthers.O. Y1	5.425
Tonawanda.N.Y. B12	6.00
Torrance.Calif. C11	6.125
Youngstown R2, U5	5.425

BARS, Reinforcing (Fabricated; to Consumers)

Boston B2	7.65
Chicago U8	6.91
Cleveland U8	6.89
Johnstown.Pa. B2	7.08
KansasCity.Mo. S5	7.35
Lackawanna.N.Y. B2	6.85
Marion.O. P11	6.70
Newark.N.J. U8	7.55
Philadelphia U8	7.38
Pittsburgh J5, U8	7.10
Seattle B3, N14	7.70
SparrowsPt.,Md. B2	7.08
St.Paul U8	7.92
Williamsport.Pa. S19	7.00

BARS, Wrought Iron

Economy.Pa.(S.R.)B14	14.45
Economy.Pa.(D.R.)B14	18.00
Economy.(Staybolt)B14	18.45

RAIL STEEL BARS

ChicagoHts.(3) C2, I-2	5.325
ChicagoHts.(4)(44) I-2	5.425
ChicagoHts.(4) C2	5.425
Franklin.Pa. (3) F5	5.325
Franklin.Pa. (4) F5	5.425
JerseyShore.Pa.(3) J8	5.30
Marion.O.(3) P11	5.325
Tonawanda(3) R12	5.325
Tonawanda(4) B12	6.00
Williamsport.Pa.(3) S19	5.50

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

Ala.City.Ala. R2	4.925
AllenportPa. P7	4.925
Ashland.Ky.(8) A10	4.925
Cleveland J5, R2	4.925
Conshohocken.Pa. A3	4.975
Detroit(8) M1	5.025
Ecorse.Mich. G5	5.025
Fairfield.Ala. T2	4.925
Fairless.Pa. U5	4.975
Fontana.Calif. K1	5.675
Gary.Ind. U5	4.925
Geneva.Utah C11	5.025
GraniteCity.Ill. (8)G4	5.125
Ind.Harbor.Ind. I-2, Y1	4.925
Irvin.Pa. U5	4.925
Lackawanna.N.Y. B2	4.925
Mansfield.O. E6	4.925
Munhall.Pa. U5	4.925
Newport.Ky.(8) A2	4.925
Niles.O. M21, S3	4.925
Pittsburg.Calif. C11	5.625
Pittsburgh J5	4.925
Portsmouth.O. P12	4.925
Riverdale.Ill. A1	4.925
Sharon.Pa. S3	4.925
S.Chicago.Ill. W14	4.925
SparrowsPoint.Md. B2	4.925
Steubenville.O. W10	4.925
Warren.O. R2	4.925
Weirton.W.Va. W6	4.925
Youngstown U5, Y1	4.925

SHEETS, H.R.(19 Ga. & Lighter)

Niles.O. M21	6.05

SHEETS, H.R. Alloy

Gary.Ind. U5	8.10
Ind.Harbor.Ind. Y1	8.10
Irvin.Pa. U5	8.10
Munhall.Pa. U5	8.10
Newport.Ky. A2	8.10
Youngstown U5, Y1	8.10

SHEETS, H.R.(14 Ga. & Heavier) High-Strength, Low-Alloy

Cleveland J5, R2	7.275
Conshohocken.Pa. A3	7.325
Ecorse.Mich. G5	7.375
Fairfield.Ala. T2	7.275
Fairless.Pa. U5	7.325
Farrell.Pa. S3	7.275
Fontana.Calif. K1	8.025
Gary.Ind. U5	7.275
Ind.Harbor.Ind. I-2, Y1	7.275
Irvin.Pa. U5	7.275
Lackawanna (35) B2	7.275
Munhall.Pa. U5	7.275
Pittsburgh J5	7.275
S.Chicago.Ill. U5, W14	7.275
Sharon.Pa. S3	7.275
SparrowsPoint(36) B2	7.275
Warren.O. R2	7.275
Weirton.W.Va. W6	7.275
Youngstown U5, Y1	7.275

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland.Ky.(8) A10	5.175
Cleveland R2	5.675
Warren.O. R2	5.675

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	6.80
Middletown.O. A10	6.55
Warren.O. R2	6.80

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity.Ala. R2	6.05
Allenport.Pa. P7	6.05
Cleveland J5, R2	6.05
Conshohocken.Pa. A3	6.10
Detroit M1	6.05
Ecorse.Mich. G5	6.15
Fairfield.Ala. T2	6.05
Fairless.Pa. U5	6.10
Follansbee.W.Va. F4	6.05
Fontana.Calif. K1	7.30
Gary.Ind. U5	6.05
GraniteCity.Ill. G4	6.25
Ind.Harbor.Ind. I-2, Y1	6.05
Irvin.Pa. U5	6.05
Lackawanna.N.Y. B2	6.05
Mansfield.O. E6	6.05
Middletown.O. A10	6.05
Newport.Ky. A2	6.05
Pittsburg.Calif. C11	7.00
Pittsburgh J5	6.05
Portsmouth.O. P12	6.05
SparrowsPoint.Md. B2	6.05
Steubenville.O. W10	6.05
Warren.O. R2	6.05
Weirton.W.Va. W6	6.05
Yorkville.O. W10	6.05
Youngstown Y1	6.05

SHEETS, Cold-Rolled High-Strength, Low-Alloy

Cleveland J5, R2	8.975
Ecorse.Mich. G5	9.075
Fairless.Pa. U5	9.025
Fontana.Calif. K1	10.275
Gary.Ind. U5	8.975
IndianaHarbor.Ind. Y1	8.975
Irvin.Pa. U5	8.975
Lackawanna(37) B2	8.975
Pittsburgh J5	8.975
SparrowsPoint (38) B2	8.975
Warren.O. R2	8.975
Weirton.W.Va. W6	8.975
Youngstown Y1	8.975

SHEETS, Culvert

	Cu Steel	Cu Fe
Ashland.Ky. A10	6.95	7.20
Canton.O. R2	6.95	7.45
Fairfield T2	6.95	7.20
Gary.Ind. U5	6.95	7.20
GraniteCity.Ill. G4	7.15	...
Ind.Harbor I-2	6.95	7.20
Irvin.Pa. U5	6.95	7.20
Kokomo.Ind. C16	7.05	...
MartinsFry. W10	6.95	7.20
Pitts.,Calif. C11	7.70	...
Pittsburgh J5	6.95	...
SparrowsPt. B2	6.95	...

SHEETS, Culvert—Pure Iron

Ind.Harbor.Ind. I-2	7.20

SHEETS, Galvanized Steel Hot-Dipped

Ala.City.Ala. R2	6.60‡
Ashland.Ky. A10	6.60†
Canton.O. R2	6.60‡
Dover.O. R1	6.60†
Fairfield.Ala. T2	6.60†
Gary.Ind. U5	6.60*
GraniteCity.Ill. G4	6.80*
Ind.Harbor.Ind. I-2	6.60†
Irvin.Pa. U5	6.60*
Kokomo.Ind. C16	6.70‡
MartinsFerry.O. W10	6.60*
Middletown.O. A10	6.60†
Pittsburg.Calif. C11	7.35*
Pittsburgh J5	6.60†
SparrowsPt.,Md. B2	6.60†
Warren.O. R2	6.60†
Weirton.W.Va. W6	6.60*

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*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana.Calif. K1	7.175

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin.Pa. U5	9.725
SparrowsPt.(39) B2	9.725

SHEETS, Galvannealed Steel

Canton.O. R2	7.00
Irvin.Pa. U5	7.00

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland.Ky. A10	6.85
Middletown.O. A10	6.85

SHEETS, Electrogalvanized

Cleveland (28) R2	7.425
Niles.O. (28) R2	7.425
Youngstown Y1	7.275
Weirton.W.Va. W6	7.275

SHEETS, Aluminum Coated

Butler.Pa. A10 (type 1)	9.25
Butler.Pa. A10 (type 2)	9.35

SHEETS, Enameling Iron

Ashland.Ky. A10	6.625
Cleveland R2	6.625
Gary.Ind. U5	6.625
GraniteCity.Ill. G4	6.825
Ind.Harbor.Ind. I-2, Y1	6.625
Irvin.Pa. U5	6.625
Middletown.O. A10	6.625
Niles.O. M21, S3	6.625
Youngstown Y1	6.625

BLUED STOCK, 29 Gage

Follansbee.W.Va. F4	8.65
Ind.Harbor.Ind. I-2	8.475
Yorkville.O. W10	8.475

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom.W.Va.W10	7.00
Gary.Ind. U5	7.00
Mansfield.O. E6	7.00
Middletown.O. A10	7.00
Niles.O. M21, S3	7.00
Warren.O. R2	7.00
Weirton.W.Va. W6	7.00

SHEETS, Long Terne, Ingot Iron

Middletown.O. A10	7.40

Key to Producers

A1	Acme Steel Co.
A2	Acme-Newport Steel Co
A3	Alan Wood Steel Co.
A4	Allegheny Ludlum Steel
A5	Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6	American Shim Steel Co
A7	American Steel & Wire Div., U. S. Steel Corp.
A8	Anchor Drawn Steel Co
A9	Angell Nail & Chaplet
A10	Armco Steel Corp.
A11	Atlantic Steel Co.
B1	Babcock & Wilcox Co
B2	Bethlehem Steel Co.
B3	Beth. Pac. Coast Steel
B4	Blair Strip Steel Co.
B5	Bliss & Laughlin Inc.
B8	Braeburn Alloy Steel
B9	Brainard Steel Div., Sharon Steel Corp.
B10	E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11	Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12	Buffalo Steel Corp.
B14	A. M. Byers Co.
B15	J. Bishop & Co.
C1	Calstrip Steel Corp.
C2	Calumet Steel Div., Borg-Warner Corp.
C4	Carpenter Steel Co.
C9	Colonial Steel Co.
C10	Colorado Fuel & Iron
C11	Columbia-Geneva Steel
C12	Columbia Steel & Shaft
C13	Columbia Tool Steel Co.
C14	Compressed Steel Shaft.
C15	Connors Steel Div., H. K. Porter Co. Inc.
C16	Continental Steel Corp.
C17	Copperweld Steel Co.
C18	Crucible Steel Co.
C19	Cumberland Steel Co.
C20	Cuyahoga Steel & Wire
C22	Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23	Charter Wire Inc.
C24	G. O. Carlson Inc.
C32	Carpenter Steel of N.Eng.
D2	Detroit Steel Corp.
D3	Dearborn Div., Sharon Steel Corp.
D4	Disston Div., H. K. Porter Co. Inc.
D6	Driver-Harris Co.
D7	Dickson Weatherproof Nail Co.
D8	Damascus Tube Co.
D9	Wilbur B. Driver Co.
E1	Eastern Gas & Fuel Assoc.
E2	Eastern Stainless Steel
E4	Electro Metallurgical Co.
E5	Elliott Bros. Steel Co.
E6	Empire Steel Corp.
F2	Firth Sterling Inc.
F3	Fitzsimmons Steel Co.
F4	Follansbee Steel Corp.
F5	Franklin Steel Div., Borg-Warner Corp.
F6	Fretz-Moon Tube Co.
F7	Ft. Howard Steel & Wire
F8	Ft. Wayne Metals Inc.
G4	Granite City Steel Co.
G5	Great Lakes Steel Corp.
G6	Greer Steel Co.
G8	Green River Steel Corp.
H1	Hanna Furnace Corp.
H7	Helical Tube Co.
I-1	Igoe Bros. Inc.
I-2	Inland Steel Co.
I-3	Interlake Iron Corp.
I-4	Ingersoll Steel Div., Borg-Warner Corp.
I-6	Ivins Steel Tube Works
I-7	Indiana Steel & Wire Co.
J1	Jackson Iron & Steel Co.
J3	Jessop Steel Co.
J4	Johnson Steel & Wire Co.
J5	Jones & Laughlin Steel
J6	Joslyn Mfg. & Supply
J7	Judson Steel Corp.
J8	Jersey Shore Steel Co.
K1	Kaiser Steel Corp.
K2	Keokuk Electro-Metals
K3	Keystone Drawn Steel
K4	Keystone Steel & Wire
K7	Kenmore Metals Corp.
L1	Laclede Steel Co.
L2	LaSalle Steel Co.
L3	Latrobe Steel Co.
L6	Lone Star Steel Co.
L7	Lukens Steel Co.
M1	McLouth Steel Corp.
M4	Mahoning Valley Steel
M6	Mercer Pipe Div., Sawhill Tubular Products
M8	Mid-States Steel & Wire
M12	Moltrup Steel Products
M14	McInnes Steel Co.
M16	Md. Fine & Special. Wire
M17	Metal Forming Corp.
M18	Milton Steel Div., Merritt-Chapman & Scott
M21	Mallory-Sharon Metals Corp.
M22	Mill Strip Products Co.
N1	National-Standard Co.
N2	National Supply Co.
N3	National Tube Div., U. S. Steel Corp.
N5	Nelsen Steel & Wire Co.
N6	New England High Carbon Wire Co.
N8	Newman-Crosby Steel
N9	Newport Steel Corp.
N14	Northwest. Steel Rolling Mills Inc.
N15	Northwestern S.&W. Co.
O4	Oregon Steel Mills
P1	Pacific States Steel Corp.
P2	Pacific Tube Co.
P4	Phoenix Iron & Steel Co., Sub. of Barium Steel Corp.
P5	Pilgrim Drawn Steel
P6	Pittsburgh Coke & Chem.
P7	Pittsburgh Steel Co.
P11	Pollak Steel Co.
P12	Portsmouth Div., Detroit Steel Corp.
P13	Precision Drawn Steel
P14	Pitts. Screw & Bolt Co.
P15	Pittsburgh Metallurgical
P16	Page Steel & Wire Div., Amer. Chain & Cable
P17	Plymouth Steel Corp.
P19	Pitts. Rolling Mills
P20	Prod. Steel Strip Corp.
P22	Phoenix Mfg. Co.
P24	Phil. Steel & Wire Corp.
R1	Reeves Steel & Mfg. Co.
R2	Republic Steel Corp.
R3	Rhode Island Steel Corp.
R5	Roebling's Sons, John A.
R6	Rome Strip Steel Co.
R8	Reliance Div., Eaton Mfg.
R9	Rome Mfg. Co.
R10	Rodney Metals Inc.
S1	Seneca Wire & Mfg. Co.
S3	Sharon Steel Corp.
S4	Sharon Tube Co.
S5	Sheffield Div., Armco Steel Corp.
S6	Shenango Furnace Co.
S7	Simmons Co.
S8	Simonds Saw & Steel Co.
S12	Spencer Wire Corp.
S13	Standard Forgings Corp.
S14	Standard Tube Co.
S15	Stanley Works
S17	Superior Drawn Steel Co.
S18	Superior Steel Div., Copperweld Steel Co.
S19	Sweet's Steel Co.
S20	Southern States Steel
S23	Superior Tube Co.
S25	Stainless Welded Prod.
S26	Specialty Wire Co. Inc.
S30	Sierra Drawn Steel Corp.
S40	Seneca Steel Service
S41	Stainless Steel Div., J&L Steel Corp.
S42	Southern Elec. Steel Co.
T2	Tenn. Coal & Iron Div., U. S. Steel Corp.
T3	Tenn. Products & Chemical Corp.
T4	Texas Steel Co.
T5	Thomas Strip Div., Pittsburgh Steel Co.
T6	Thompson Wire Co.
T7	Timken Roller Bearing
T9	Tonawanda Iron Div., Am. Rad. & Stan. San.
T13	Tube Methods Inc.
T19	Techalloy Co. Inc.
U4	Universal-Cyclops Steel
U5	United States Steel Corp.
U6	U. S. Pipe & Foundry
U7	Ulbrich Stainless Steels
U8	U. S. Steel Supply Div., U. S. Steel Corp.
V2	Vanadium-Alloys Steel
V3	Vulcan Crucible Steel Div., H. K. Porter Co.
W1	Wallace Barnes Co.
W2	Wallingford Steel Co.
W3	Washburn Wire Co.
W4	Washington Steel Corp.
W6	Weirton Steel Co.
W8	Western Automatic Machine Screw Co.
W9	Wheatland Tube Co.
W10	Wheeling Steel Corp.
W12	Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13	Wilson Steel & Wire Co.
W14	Wisconsin Steel Div., International Harvester
W15	Woodward Iron Co.
W18	Wyckoff Steel Co.
Y1	Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	4.925
Allenport,Pa. P7	4.925
Alton,Ill. L1	5.125
Ashland,Ky.(8) A10	4.925
Atlanta A11	5.125
Bessemer,Ala. T2	4.925
Birmingham C15	4.925
Buffalo (27) R2	4.925
Conshohocken,Pa. A3	4.975
Detroit M1	5.025
Ecorse,Mich. G5	5.025
Fairfield,Ala. T2	4.925
Fontana,Calif. K1	5.675
Gary,Ind. U5	4.925
Ind.Harbor,Ind. I-2, Y1	4.925
Johnstown,Pa. (25) B2	4.925
Lackaw'na,N.Y.(25) B2	4.925
LosAngeles(25) B3	5.675
Minnequa,Colo. C10	6.025
Pittsburg,Calif. C11	5.675
Riverdale,Ill. A1	4.925
SanFrancisco S7	6.35
Seattle(25) B3	6.35
Seattle N14	6.35
Sharon,Pa. S3	4.925
S.SanFrancisco(25) B3	5.675
SparrowsPoint,Md. B2	4.925
Sterling,Ill. (1) N15	4.925
Sterling,Ill. N15	5.025
Torrance,Calif. C11	5.675
Warren,O. R2	4.925
Weirton,W.Va. W6	4.925
Youngstown U5	4.925

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18	8.10
Farrell,Pa. S3	8.10
Gary,Ind. U5	8.10
Houston S5	8.35
Ind.Harbor,Ind. Y1	8.10
KansasCity,Mo. S5	8.35
LosAngeles B3	9.30
Lowellville,O. S3	8.10
Newport,Ky. A2	8.10
Sharon,Pa. A2	8.10
S.Chicago,Ill. W14	8.10
Youngstown U5, Y1	8.10

STRIP, Hot-Rolled High-Strength, Low-Alloy

Bessemer,Ala. T2	7.325
Conshohocken,Pa. A3	7.325
Ecorse,Mich. G5	7.425
Fairfield,Ala. T2	7.325
Farrell,Pa. S3	7.325
Gary,Ind. U5	7.325
Ind.Harbor,Ind. I-2, Y1	7.325
Lackawanna,N.Y. B2	7.325
LosAngeles(25) B3	8.075
Seattle(25) B3	8.325
Sharon,Pa. S3	7.325
S.Chicago,Ill. W14	7.325
S.SanFrancisco(25) B3	8.075
SparrowsPoint,Md. B2	7.325
Warren,O. R2	7.325
Weirton,W.Va. W6	7.325
Youngstown U5, Y1	7.325

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	5.175
Warren,O. R2	5.675

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	7.15
Baltimore T6	7.15
Boston T6	7.70
Buffalo S40	7.15
Cleveland A7, J5	7.15
Conshohocken,Pa. A3	7.20
Dearborn,Mich. D3	7.25
Detroit D2, M1, P20	7.25
Dover,O. G6	7.15
Ecorse,Mich. G5	7.25
Evanston,Ill. M22	7.25
Follansbee,W.Va. F4	7.15
Fontana,Calif. K1	9.00
FranklinPark,Ill. T6	7.25
Ind.Harbor, Ind. Y1	7.15
Indianapolis J5	7.30
LosAngeles J5	9.05
LosAngeles C1	9.20
NewBedford,Mass. R10	7.60
NewBritain(10) S15	7.15
NewCastle,Pa. B4, E5	7.15
NewHaven,Conn. D2	7.60
NewKensington,Pa. A6	7.15
Pawtucket,R.I. R3	7.80
Pawtucket,R.I. N8	7.70
Philadelphia(45) P24	7.70
Pittsburgh J5	7.15
Riverdale,Ill. A1	7.25
Rome,N.Y. (32) R6	7.15
Sharon,Pa. S3	7.15
Trenton,N.J. (31) R5	8.60
Wallingford,Conn. W2	7.60
Warren,O. R2, T5	7.15
Weirton,W.Va. W6	7.15
Worcester,Mass. A7	7.70
Youngstown J5, Y1	7.15

STRIP, Cold-Rolled Alloy

Boston T6	15.40
Carnegie,Pa. S18	15.05
Cleveland A7	15.05
Dover,O. G6	15.05
Farrell,Pa. S3	15.05
FranklinPark,Ill. T6	15.05
Harrison,N.J. C18	15.05
Indianapolis J5	15.20
Lowellville,O. S3	15.05
Pawtucket,R.I. N8	15.40
Riverdale,Ill. A1	15.05
Sharon,Pa. S3	15.05
Worcester,Mass. A7	15.35
Youngstown J5	15.05

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	10.45
Dearborn,Mich. D3	10.60
Dover,O. G6	10.45
Ecorse,Mich. G5	10.55
Farrell,Pa. S3	10.50
Ind.Harbor,Ind. Y1	10.65
Sharon,Pa. S3	10.50
Warren,O. R2	10.45
Weirton,W.Va. W6	10.50
Youngstown Y1	10.65

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	7.90

STRIP, C.R. Electrogalvanized

Cleveland A7	7.15*
Dover,O. G6	7.15*
Evanston,Ill. M22	7.25*
Riverdale,Ill. A1	7.25*
Warren,O. B9, T5	7.15*
Worcester,Mass. A7	7.70*
Youngstown J5	7.15*

*Plus galvanizing extras.

STRIP, Galvananized (Continuous)

Sharon,Pa. S3	7.275

TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Riverdalle,Ill. A1	5.50
Sharon,Pa. S3	5.35
Youngstown U5	5.35

STRIP, Cold-Finished Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	..	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. D3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60		....
Fostoria,O. S1	10.05	11.15	13.10	16.10	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	....	....	12.90	16.10	19.30
Indianapolis J5	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles J5	11.15	12.60	14.80	....	....
NewBritain,Conn.(10) S15	8.95	10.40	12.60	15.60	18.55
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	8.95	10.40	12.60	15.60	....
New York W3	...	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	..	10.70	12.90	16.10	19.30
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown J5	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)

	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	18.10	21.95	26.30
Buffalo W12	18.10	....	....
Fostoria,O. S1	18.30	22.15	....
FranklinPark,Ill. T6	18.45	22.30	26.65
Harrison,N.J. C18	18.10	21.95	26.30
New York W3	18.10	21.95	26.30
Palmer,Mass. W12	18.10	....	....
Trenton,N.J. R5	18.10	21.95	26.30
Worcester,Mass. A7, T6	18.10	21.95	26.30
Youngstown J5	18.45	22.30	26.65

SILICON STEEL

H.R.SHEETS(22 Ga.,cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	....	11.80	12.90	13.95
Mansfield,O. E6	9.625	11.10	11.80	12.90	13.95
Newport,Ky. A2	9.625	11.10	11.80	12.90	13.95
Niles,O. M21, S3	9.625	11.10	11.80	12.90	....
Vandergrift,Pa. U5	....	11.10	11.80	12.90	13.95
Warren,O. R2	9.625	11.10	11.80	12.90	....
Zanesville,O. A10	....	11.10	11.80	12.90	13.95
Zanesville,O. A10 (SP Coils)	....	....	11.55	12.65	13.70

C.R. COILS & CUT LENGTHS (22 Ga.) Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.35	12.05	13.15	14.20
Brakenridge,Pa. A4	....	....	12.05	13.15	14.20
GraniteCity,Ill. G4	9.825*	11.05*	11.75*	12.85*	....
IndianaHarbor,Ind. I-2	9.625†	10.85*	11.55*	12.65*	....
Mansfield,O. E6	9.625*	11.35	12.05	13.15	14.20
Vandergrift,Pa. U5	9.625*	11.35	12.05	13.15	14.20
Warren,O. R2	9.625*	11.35	12.05	13.15	14.20
Zanesville,O. A10(FP Coils)	....	11.35	12.05	13.15	14.20

	Stator
Vandergrift,Pa. U5	7.85

H.R. SHEETS (22Ga., cut lengths)	Transformer Grades T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.00	15.55	16.05	17.10
Vandergrift,Pa. U5	15.00	15.55	16.05	17.10
Zanesville,O. A1O	15.00	15.55	16.05	17.10

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brakenridge,Pa. A4	....	17.60	19.20	19.70	20.20	....
Butler,Pa. A10	....	....	19.20	19.70	20.20	....
Vandergrift,Pa. U5	16.60	17.60	19.20	19.70	20.20	15.25**
Warren,O. R2	....	....	....	....	....	15.25‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. **Cut lengths, ¾-cent lower.

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$8.75	$9.00	$9.40
Fairfield,Ala. T2	8.85	9.10	9.50
Fairless,Pa. U5	8.85	9.10	9.50
Fontana,Calif. K1	9.50	9.75	10.15
Gary,Ind. U5	8.75	9.00	9.40
GraniteCity,Ill. G4	8.85	9.10	9.50
IndianaHarbor,Ind. I-2, Y1	8.75	9.00	9.40
Irvin,Pa. U5	8.75	9.00	9.40
Niles,O. R2	8.75	9.00	9.40
Pittsburg,Calif. C11	9.50	9.75	10.15
SparrowsPoint,Md. B2	8.85	9.10	9.50
Weirton,W.Va. W6	8.75	9.00	9.40
Yorkville,O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	7.725	7.925	...
Niles,O. R2	7.725	7.925	8.125

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa.J5	$10.05	$10.30
Fairfield,Ala. T2	10.15	10.40
Fairless,Pa. U5	10.15	10.40
Fontana,Calif.K1	10.80	11.05
Gary,Ind. U5	10.05	10.30
Irvin,Pa. U5	10.05	10.30
Pitts.,Calif. C11	10.80	11.05
Sp.Pt.,Md. B2	10.15	10.40
Weirton,W.Va.W6	10.05	10.30
Yorkville,O. W10	10.05	10.30

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$7.85
Fairfield,Ala. T2	7.95
Fairless,Pa. U5	7.95
Fontana,Calif. K1	8.60
Gary,Ind. U5	7.85
GraniteCity,Ill. G4	7.95
Ind.Harbor,Ind. I-2,Y1	7.85
Irvin,Pa. U5	7.85
Niles,O. R2	7.85
Pittsburg,Calif. C11	8.60
SparrowsPoint,Md. B2	7.95
Weirton,W.Va. W6	7.85
Yorkville,O. W10	7.85

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa,Pa. J5	$7.50
Gary,Ind. U5	7.50
GraniteCity,Ill. G4	7.60
Ind.Harbor,Ind. Y1	7.50
Irvin,Pa. U5	7.50
Yorkville,O. W10	7.50

MANUFACTURING TERNES (Special Coated, Base Box)

Gary,Ind. U5	$9.70
Irvin,Pa. U5	9.70

ROOFING SHORT TERNES (8 lb Coated, Base Box)

Gary,Ind. U5	$11.25

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	7.65
Aliquippa,Pa. J5	7.65
Alton,Ill. L1	7.85
Atlanta A11	7.85
Bartonville,Ill. K4	7.75
Buffalo W12	7.65
Chicago W13	7.65
Cleveland A7, C20	7.65
Crawfordsville,Ind. M8	7.75
Donora,Pa. A7	7.65
Duluth A7	7.65
Fairfield,Ala. T2	7.65
Fostoria,O.(24) S1	7.75
Houston S5	7.90
Jacksonville,Fla. M8	8.00
Johnstown,Pa. B2	7.65
Joliet,Ill. A7	7.65
KansasCity,Mo. S5	7.90
Kokomo,Ind. C16	7.75
LosAngeles B3	8.60
Minnequa,Colo. C10	7.90
Monessen,Pa. P7, P16	7.65
N.Tonawanda,N.Y. B11	7.65
Palmer,Mass. W12	7.95
Pittsburg,Calif. C11	8.60
Portsmouth,O. P12	7.65
Rankin,Pa. A7	7.65
S.Chicago,Ill. R2	7.65
S.SanFrancisco C10	8.60
SparrowsPoint,Md. B2	7.75
Sterling,Ill.(1) N15	7.65
Sterling,Ill. N15	7.75
Struthers,O. Y1	7.65
Waukegan,Ill. A7	7.65
Worcester,Mass. A7	7.95

WIRE, Gal'd ACSR for Cores

Bartonville,Ill. K4	12.65
Buffalo W12	12.65
Cleveland A7	12.65
Donora,Pa. A7	12.65
Duluth A7	12.65
Johnstown,Pa. B2	12.65
Minnequa,Colo. C10	12.775
Monessen,Pa. P16	12.65
Muncie,Ind. I-7	12.85
NewHaven,Conn. A7	12.95
Palmer,Mass. W12	12.95
Pittsburg,Calif. C11	13.45
Portsmouth,O. P12	12.65
Roebling,N.J. R5	12.95
SparrowsPt.,Md. B2	12.75
Struthers,O. Y1	12.65
Trenton,N.J. A7	12.95
Waukegan,Ill. A7	12.65
Worcester,Mass. A7	12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	9.30
Alton,Ill. L1	9.50
Buffalo W12	9.30
Cleveland A7	9.30
Donora,Pa. A7	9.30
Duluth A7	9.30
Johnstown,Pa. B2	9.30
KansasCity,Mo. S5	9.55
LosAngeles B3	10.25
Minnequa,Colo. C10	9.50
Monessen,Pa. P7, P16	9.30
NewHaven,Conn. A7	9.60
Palmer,Mass. W12	9.60
Pittsburg,Calif. C11	10.25
Portsmouth,O. P12	9.30
Roebling,N.J. R5	9.60
S.Chicago,Ill. R2	9.30
S.SanFrancisco C10	10.25
SparrowsPt.,Md. B2	9.40
Struthers,O. Y1	9.30
Trenton,N.J. A7	9.60
Waukegan,Ill. A7	9.30
Worcester,Mass. A7	9.60

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5	9.30
Alton,Ill. L1	9.50
Bartonville,Ill. K4	9.40
Buffalo W12	9.30
Cleveland A7	9.30
Donora,Pa. A7	9.30
Duluth A7	9.30
Fostoria,O. S1	9.35
Johnstown,Pa. B2	9.30
KansasCity,Mo. S5	9.55
LosAngeles B3	10.25
Milbury,Mass.(12) N6	9.60
Minnequa,Colo. C10	9.50
Monessen,Pa. P7, P16	9.30
Muncie,Ind. I-7	9.50
Palmer,Mass.(12) W12	9.60
Pittsburg,Calif. C11	10.25
Portsmouth,O. P12	9.30
Roebling,N.J. R5	9.60
S.Chicago,Ill. R2	9.30
S.SanFrancisco C10	10.25
SparrowsPt.,Md. B2	9.40
Struthers,O. Y1	9.30
Trenton,N.J. A7	9.60
Waukegan,Ill. A7	9.30
Worcester A7, J4, T6	9.60

WIRE, Fine & Weaving (8" Coils)

Alton,Ill. L1	15.80
Bartonville,Ill. K4	15.70
Buffalo W12	15.60
Chicago W13	15.60
Cleveland A7	15.60
Crawfordsville,Ind. M8	15.70
Fostoria,O. S1	15.60
Houston S5	15.85
Jacksonville,Fla. M8	15.95
Johnstown,Pa. B2	15.60
KansasCity,Mo. S5	15.85
Kokomo,Ind. C16	15.60
Minnequa,Colo. C10	15.85
Monessen,Pa. P7, P16	15.60
Muncie,Ind. I-7	15.80
Palmer,Mass. W12	15.90
S.SanFrancisco C10	16.45
Waukegan,Ill. A7	15.60
Worcester,Mass. A7, T6	15.90

ROPE WIRE

Bartonville,Ill. K4	12.75
Buffalo W12	12.75
Fostoria,O. S1	12.75
Johnstown,Pa. B2	12.75
Monessen,Pa. P7	12.75
Muncie,Ind. I-7	12.95
Palmer,Mass. W12	13.05
Portsmouth,O. P12	12.75
Roebling,N.J. R5	13.05
SparrowsPt.,Md. B2	12.85
Struthers,O. Y1	12.75
Worcester,Mass. J4	13.05

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE, Tire Bead	
Bartonville,Ill. K4	16.55
Monessen,Pa. P16	16.55
Roebling,N.J. R5	17.05

WIRE, Cold-Rolled Flat	
Anderson,Ind. G6	11.65
Baltimore T6	11.95
Boston T6	11.95
Buffalo W12	11.65
Chicago W13	11.75
Cleveland A7	11.65
Crawfordsville,Ind. M8	11.65
Dover,O. G6	11.65
Fostoria,O. S1	11.65
FranklinPark,Ill. T6	11.75
Kokomo,Ind. C16	11.65
Massillon,O. R8	11.65
Milwaukee C23	11.85
Monessen,Pa. P7, P16	11.65
Palmer,Mass. W12	11.95
Pawtucket,R.I. N8	11.95
Philadelphia P24	11.95
Riverdale,Ill. A1	11.75
Rome,N.Y. R6	11.65
Sharon,Pa. S3	11.65
Trenton,N.J. R5	11.95
Warren,O. B9	11.65
Worcester,Mass. A7, T6	11.95

NAILS, Stock	Col.
AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville, Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla.(20) M8	184
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	179

(To Wholesalers; per cwt)	
Galveston,Tex. D7	$9.10

NAILS, Cut (100 lb keg) To Dealers (33)	
Conshohocken,Pa. A3	$9.80
Wheeling,W.Va. W10	9.80

POLISHED STAPLES	Col.
AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	175
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind M8	177
Donora,Pa. A7	175
Duluth A7	175
Fairfield,Ala. T2	175
Jacksonville,Fla.(20) M8	186
Johnstown,Pa. B2	175
Joliet,Ill. A7	175
Kokomo,Ind. C6	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	175
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.)(Per 97 lb Net Box)

Coil No. 3150	
AlabamaCity,Ala. R2	$10.26
Atlanta A11	10.36
Bartonville,Ill. K4	10.36
Buffalo W12	10.26
Chicago W13	10.26
Crawfordsville,Ind. M8	10.36
Donora,Pa. A7	10.26
Duluth A7	10.26
Fairfield,Ala T2	10.26
Houston S5	10.51
Jacksonville,Fla. M8	10.82
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	10.26
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	10.36
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	11.04
S.Chicago,Ill. R2	10.26
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill.(37) N15	10.36

Coil No. 6500 Stand.	
AlabamaCity,Ala. R2	$10.60
Atlanta A11	10.70
Bartonville,Ill. K4	10.70
Buffalo W12	10.60
Chicago W13	10.60
Crawfordsville,Ind. M8	10.70
Donora,Pa. A7	10.60
Duluth A7	10.60
Fairfield,Ala T2	10.60
Houston S5	10.85
Jacksonville,Fla. M8	11.16
Johnstown,Pa. B2	10.60
Joliet, Ill. A7	10.60
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	10.70
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	11.40
S.Chicago,Ill. R2	10.60
S. SanFrancisco C10	11.40
SparrowsPt., Md. B2	10.70
Sterling,Ill.(37) N15	10.70

Coil No. 6500 Interim	
AlabamaCity,Ala. R2	$10.65
Atlanta A11	10.75
Bartonville,Ill. K4	10.75
Buffalo W12	10.65
Chicago W13	10.65
Crawfordsville,Ind. M8	10.75
Donora,Pa. A7	10.65
Duluth A7	10.65
Fairfield,Ala. T2	10.65
Houston S5	10.90
Jacksonville,Fla. M8	11.21
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	10.65
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	10.75
LosAngeles B3	11.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	11.45
S.Chicago,Ill. R2	10.65
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill(37) N15	10.75

BALE TIES, Single Loop	Col.
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	219
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg, Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md B2	214
Sterling,Ill.(7) N15	214
Williamsport,Pa. S19	175

FENCE POSTS	
Birmingham C15	171
ChicagoHts.,Ill. C2, I-2	172
Duluth A7	172
Franklin,Pa. F5	172
Huntington,W.Va. C15	171
Johnstown,Pa. B2	172
Marion,O. P11	172
Minnequa,Colo. C10	177
Sterling,Ill.(1) N15	172
Tonawanda,N.Y. B12	174

WIRE, Barbed	Col.
AlabamaCity,Ala. R2	193••
Aliquippa,Pa. J5	190§
Atlanta A11	198•
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198••
Jacksonville,Fla. M8	203
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198••
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198••
Monessen,Pa. P7	196•
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193••
S.SanFrancisco C10	213••
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198§

WOVEN FENCE, 9-15 Ga.	Col.
Ala.City,Ala. R2	187••
Aliq'ppa,Pa.9-14½ga.J5	190§
Atlanta A11	192•
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192••
Jacksonville,Fla. M8	197
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192••
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192••
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187••
Sterling,Ill.(7) N15	192§

WIRE (16 gage)	An'ld Stone	Galv. Stone
Ala.City,Ala.R2	17.15	18.70••
Aliq'ppa,Pa. J5	17.15	18.95
Bartonville K4	17.25	19.05
Cleveland A7	17.15	....
Crawf'dsville M8	17.25	19.05
Fostoria,O. S1	17.65	19.20†
Houston S5	17.40	18.95••
Jacksonville M8	17.50	19.30
Johnstown B2	17.15	18.95§
Kan.City,Mo. S5	17.40	....
Kokomo C16	17.25	18.80†
Minnequa C10	17.40	18.95••
P'lm'r.Mass.W12	17.45	19.00†
Pitts.,Calif. C11	17.50	19.05†
SparrowsPt. B2	17.25	19.05§
Sterling(37)N15	17.25	19.05§
Waukegan A7	17.15	18.70†
Worcester A7	17.45	....

WIRE, Merchant Quality (6 to 8 gage)	An'ld	Galv.
Ala.City,Ala. R2	8.65	9.20••
Aliquippa J5	8.65	9.325§
Atlanta(48) A11	8.75	9.425•
Bartonville(48) K4	8.75	9.425
Buffalo W12	8.65	9.20†
Cleveland A7	8.65	....
Crawfordsville M8	8.75	9.425
Donora,Pa. A7	8.65	9.20†
Duluth A7	8.65	9.20†
Fairfield T2	8.65	9.20†
Houston(48) S5	8.90	9.45••
Jacks'ville,Fla. M8	9.00	9.675
Johnstown B2(48)	8.65	9.325§
Joliet,Ill. A7	8.65	9.20†
Kans.City(48) S5	8.90	9.45••
Kokomo C16	8.75	9.30†
LosAngeles B3	9.60	10.275§
Minnequa C10	8.90	9.45••
Monessen P7(48)	8.65	9.25•
Palmer,Mass. W12	8.95	9.50†
Pitts.,Calif. C11	9.60	10.15†
Rankin,Pa. A7	8.65	9.20†
S.Chicago R2	8.65	9.20••
S.SanFran. C10	9.60	10.15••
Spar'wsPt.B2(48)	8.75	9.425§
Sterling(48) N15	8.90	9.575§
Sterling(1)(48)	8.80	9.475§
Struthers,O.(48)Y1	8.65	9.30‡
Worcester,Mass.A7	8.95	9.50†

Based on zinc price of: •13.50. †5c. §10c. ‡Less than 10c. ††10.50c. ••Subject to zinc equalization extras.

FASTENERS

(Base discounts, full container quantity, per cent off list, f.o.b. mill)

BOLTS

Carriage, Machine Bolts	
Full Size Body (cut thread)	
½ in. and smaller:	
6 in. and shorter	49.0
Longer than 6 in.	39.0
⅝ in. thru 1 in.:	
6 in. and shorter	39.0
Longer than 6 in.	35.0
1⅛ in. and larger:	
All lengths	35.0
Undersized Body (rolled thread)	
½ in. and smaller:	
6 in. and shorter	49.0
Carriage, Machine, Lag Bolts Hot Galvanized:	
½ in. and smaller:	
6 in. and shorter	29.0
Longer than 6 in.	15.0
⅝ in. and larger:	
All lengths	12.0
Lag Bolts (all diam.)	
6 in. and shorter	49.0
Longer than 6 in.	39.0
Plow and Tap Bolts	
½ in. and smaller by 6 in. and shorter	49.0
Larger than ½ in. or Longer than 6 in.	39.0
Blank Bolts	39.0
Step, Elevator, Tire Bolts	49.0
Stove Bolts, Slotted:	
⅛ to ¼ in. incl., 3 in. and shorter.	55.0
5/16 to ½ in., inclusive	55.0

NUTS

Reg. & Heavy Square Nuts:	
All sizes	55.5
Square Nuts, Reg. & Heavy, Hot Galvanized:	
All sizes	41.0
Hex Nuts, Reg. & Heavy, Hot Pressed:	
¾ in. and smaller	60.5
⅞ in. to 1 in., incl.	55.5
1⅛ in. to 1½ in., incl.	58.5
1⅝ in. and larger	53.5
Hex Nuts, Reg. & Heavy, Cold Punched:	
¾ in. and smaller	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5
Hex Nuts, All Types, Hot Galvanized:	
¾ in. and smaller	46.5
⅞ in. to 1 in., incl.	41.5
1⅛ in. to 1½ in., incl.	46.5
Hex Nuts, Semifinished, Heavy (Incl. Slotted):	
¾ in. and smaller	60.5
⅞ in. to 1½ in., incl	55.5
1⅝ in. and larger	53.5
Hex Nuts, Finished (Incl. Slotted and Castellated):	
1 in. and smaller	63.0
1⅛ in. to 1½ in., incl.	59.0
1⅝ in. and larger	53.5
Semifinished Hex Nuts, Reg. (Incl. Slotted):	
⅝ in. and smaller	60.5
¾ in. to 1 in., incl.	63.0
1⅛ in. to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

CAP AND SETSCREWS

(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Capscrews, Coarse or Fine Thread, Bright:	
6 in. and shorter:	
⅝ in. and smaller	40.0
¾, ⅞, and 1 in. diam.	22.0
Longer than 6 in.:	
⅝ in. and smaller	8.0
¾, ⅞, and 1 in. diam.	+6.0
High Carbon, Heat Treated:	
6 in. and shorter:	
⅝ in. and smaller	26.0
¾, ⅞, and 1 in. diam.	3.0
Longer than 6 in.:	
⅝ in. and smaller	+13.0
¾, ⅞, and 1 in. diam.	+32.0
Flat Head Capscrews:	
¾ in. and smaller	+76.0
Setscrews, Square Head, Cup Point, Coarse Thread:	
Through 1 in. diam.:	
6 in. and shorter	Net
Longer than 6 in.	+23

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.

Structural ½ in., larger 12.25

7/16 in. under: List less 19%

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	25.98	23.54
1¼	13	....	30.78	23.36
1½	13	29.03	34.01	25.83
1¾	13	34.29	40.18	30.51
2	13	38.44	45.05	34.20
2¼	13	43.29	50.75	38.52
2¼	12	46.99	55.06	41.81
2½	12	51.76	60.65	46.05
2¾	12	56.04	65.67	49.88
3	12	59.76	70.03	53.19

RAILWAY MATERIALS

	Standard			Tee Rails
Rails	No. 1	No. 2	All No. 2	60 lb Under
Bessemer,Pa. U5	5.525	5.425	....	6.50
Ensley,Ala. T2	5.525	5.425	....	6.50
Fairfield,Ala. T2	....	....	....	6.50
Gary,Ind. U5	5.525	5.425	....	...
Huntington,W.Va. C15	....	....	....	6.50
IndianaHarbor,Ind. I-2	5.525	5.425	5.475	...
Johnstown,Pa. B2	....	....	...	(16)6.50
Lackawanna,N.Y. B2	5.525	5.425	....	6.50
Minnequa,Colo. C10	5.525	5.425	....	7.00
Steelton,Pa. B2	5.525	5.425	....	...
Williamsport,Pa. S19	....	....	....	6.50

TIE PLATES	
Fairfield,Ala. T2	6.60
Gary,Ind. U5	6.60
Ind.Harbor,Ind. I-2	6.60
Lackawanna,N.Y. B2	6.60
Minnequa,Colo. C10	6.60
Seattle B3	6.75
Steelton,Pa. B2	6.60
Torrance,Calif. C11	6.75

JOINT BARS	
Bessemer,Pa. U5	6.975
Fairfield,Ala. T2	6.975
Ind.Harbor,Ind. I-2	6.975
Joliet,Ill. U5	6.975
Lackawanna,N.Y. B2	6.975
Minnequa,Colo. C10	6.975
Steelton,Pa. B2	6.975

AXLES	
Ind.Harbor,Ind. S13	8.775
Johnstown,Pa. B2	8.775

TRACK BOLTS, Untreated	
Cleveland R2	14.75
KansasCity,Mo. S5	14.75
Lebanon,Pa. B2	14.75
Minnequa,Colo. C10	14.75
Pittsburgh P14	14.75
Seattle B3	15.25

SCREW SPIKES	
Lebanon,Pa. B2	14.50

STANDARD TRACK SPIKES	
Fairfield,Ala. T2	9.75
Ind.Harbor,Ind. I-2, Y1	9.75
KansasCity,Mo. S5	9.75
Lebanon,Pa. B2	9.75
Minnequa,Colo. C10	9.75
Pittsburgh J5	9.75
Seattle B3	10.25
S.Chicago,Ill. R2	9.75
Struthers,O. Y1	9.75
Youngstown R2	9.75

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 13 Ga. and heavier.
(9) Merchant quality; and 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) Plus 1c per 100 lb.
(21) New Haven, Conn. base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.15c, finer than 15 Ga.
(25) Bar mill bands.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.60c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.685c.
(43) 9-14½ Ga.
(44) To fabricators.
(45) 0.022 in. and lighter, over 0.022", 8.20c.
(48) 6-7Ga.
(49) 3½ in. and smaller rounds; 9.30c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	**Galv***	**Blk**	**Galv***	**Blk**	**Galv***	**Blk**	**Galv***	**Blk**	**Galv***	**Blk**	**Galv***	**Blk**	**Galv***
Aliquippa, Pa. J5	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Ambridge, Pa. N2	+9.25	....	+2.75	....	+0.25	....	1.25	....	1.25	....	1	....	3.5	....
Lorain, O. N3	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Youngstown Y1	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

ELECTRIC STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	**Galv***	**Blk**	**Galv***	**Blk**	**Galv***	**Blk**	**Galv***	**Blk**	**Galv***	**Blk**	**Galv***	**Blk**	**Galv***
Aliquippa, Pa. J5	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Alton, Ill. L1	....	....	....	....	....	....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Benwood, W. Va. W10	4.5	+22	+7.5	+31	+18	+39.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Butler, Pa. F6	5.5	+21	+6.5	+30	+17	+38.5	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Fairless, Pa. N3	....	....	....	....	....	....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Fontana, Calif. K1	....	....	....	....	....	....	+8.25	+23.5	+5.25	+19.5	+1.75	+15	0.75	+14.25
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	4.25	+11	7.25	+7	10.75	+2.5	13.25	+3.25
Lorain, O. N3	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sharon, Pa. S4	5.5	+21	+6.5	+30	+17	+38.5	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sparrows Pt., Md. B2	3.5	+23	+8.5	+32	+19	+40.5	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Wheatland, Pa. W9	5.5	+21	+6	+30	+17	+38.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Youngstown R2, Y1	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	**Galv***	**Blk**	**Galv***	**Blk**	**Galv***	**Blk**	**Galv***	**Blk**	**Galv***	**Blk**	**Galv***
Aliquippa, Pa. J5	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Alton, Ill. L1	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	....	....	....	....
Benwood, W. Va. W10	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Etna, Pa. N2	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Fairless, Pa. N3	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
Fontana, Calif. K1	1.25	+13.25	1.75	+12.75	3.25	+13	3.25	+13	+7.25	+24	+7.25	+24
Indiana Harbor, Ind. Y1	13.75	+0.75	14.25	+0.25	15.75	+0.5	15.25	+0.5	5.25	+11.5	5.25	+11.5
Lorain, O. N3	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Sharon, Pa. M6	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Sparrows Pt., Md. B2	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
Wheatland, Pa. W9	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Youngstown R2, Y1	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	Wire Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.00	27.00	....	36.00	....	42.00	44.25	48.50	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	45.00	49.25	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	46.25	51.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	47.25	52.00	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	49.50	57.00	57.00
303	....	32.00	41.00	....	45.50	48.00	50.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	50.75	55.50	55.50
304L	....	....	48.25	51.50	53.00	55.50	58.50	63.25	63.25
305	28.50	36.75	42.50	47.50	45.25	47.75	51.25	58.75	58.75
308	30.75	38.25	47.25	50.25	52.75	55.75	60.25	63.00	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	71.00	80.50	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	92.75	96.75	96.75
314	....	....	....	....	86.50	....	92.75	....	104.50
316	39.75	49.50	62.25	69.25	69.25	73.00	76.75	81.50	81.50
316L	....	....	70.00	76.50	77.00	80.75	84.50	89.25	89.25
317	48.00	60.00	76.75	88.25	86.25	90.75	93.50	101.00	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	59.75	65.50	65.50
330	....	....	106.75	....	106.75	106.75	105.50	108.00	149.25
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	69.75	79.25	79.25
403	....	....	32.00	....	35.75	37.75	40.25	48.25	48.25
405	19.50	25.50	29.75	36.00	33.50	35.25	37.50	46.75	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	35.00	40.25	40.25
416	....	....	28.75	....	32.50	34.25	36.25	48.25	48.25
420	....	33.50	34.25	41.75	39.25	41.25	45.25	62.00	62.00
430	17.00	21.75	28.75	32.00	32.50	34.25	36.00	40.75	40.75
430F	....	....	29.50	....	33.00	34.75	36.75	51.75	51.75
431	....	28.75	37.75	....	42.00	44.25	46.00	56.00	56.00
446	....	....	39.25	59.00	44.25	46.50	47.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless Steel Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McInnes Steel Co.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steels Inc.; U. S. Steel Corp.; Universal-Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel Co., subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.

Clad Steel

	—Plates— Carbon Base 5%	10%	15%	20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	34.70	37.95	42.25	46.70	40.00
304L	36.90	40.55	45.10	49.85	....
316	40.35	44.40	49.50	54.50	58.75
316L	45.05	49.35	54.70	60.10	....
316 Cb	47.30	53.80	61.45	69.10	....
321	36.60	40.05	44.60	49.30	47.25
347	38.25	42.40	47.55	52.80	57.00
405	28.60	29.85	33.35	36.85	....
410	28.15	29.55	33.10	36.70	....
430	28.30	29.80	33.55	37.25	....
Inconel	48.90	59.55	70.15	80.85	....
Nickel	41.65	51.95	62.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....
Copper*	....	....	....	....	46.00

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	33.95	40.25

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*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.305	Cr-Hot Work	0.475
Extra Carbon	0.360	W-Cr Hot Work	0.500
Special Carbon	0.475	V-Cr Hot Work	0.520
Oil Hardening	0.475	Hi-Carbon-Cr	0.925

Grade by Analysis (%)

W	Cr	V	Co	Mo	$ per lb
20.25	4.25	1.6	12.25	...	4.285
18.25	4.25	1	4.75	...	2.500
18	4	2	9	...	2.870
18	4	2	....	...	1.960
18	4	1	....	...	1.795
9	3.5	..	....	...	1.395
13.5	4	3	....	...	2.060
13.75	3.75	2	5	...	2.440
6.4	4.5	1.9	....	5	1.300
6	4	3	....	6	1.545
1.5	4	1	....	8.5	1.155

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal transportation tax.

	Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District				
AlabamaCity,Ala. R2	62.00	62.50	...	
Birmingham R2	62.00	62.50‡	...	
Birmingham U6	...	62.50‡	66.50	
Woodward,Ala. W15	62.00**	62.50‡	66.50	..
Cincinnati, deld.	.	70.20	...	
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9		66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	
Rochester,N.Y., deld.	69.02	69.52	70.02	
Syracuse,N.Y., deld.	70.12	70.62	71.12	
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. R2	66.00	...	66.50	67.00
S.Chicago,Ill. W14	66.00		66.50	67.00
Milwaukee, deld.	68.62	69.12	69.12	69.62
Muskegon,Mich., deld.		74.12	74.12	
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.12	69.62	69.62	70.12
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	66.50	67.00	67.50	
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
NewYork, deld.		75.10	75.60	
Newark,N.J., deld.	72.29	72.79	73.29	73.79
Philadelphia, deld	70.01	70.51	71.01	71.59
Troy, N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.		67.95	67.95	68.48
McKeesRocks,Pa., deld.		67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.		68.26	68.26	68.79
Verona,Trafford,Pa., deld	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	...		..

	Basic	No. 2 Foundry	Malleable	Bessemer
Youngstown District				
Hubbard,Ohio Y1		...	66.50	...
Sharpsville,Pa. S6	66.00	...	66.50	67.00
Youngstown Y1		...	66.50	67.00
Mansfield,Ohio, deld.	70.90	...	71.40	71.90
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	...
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah, C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood,Tenn. T3	...	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.54	73.04	....	....

**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.

‡Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio. I-3, J1	78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry, $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$78.50
Troy,N.Y. R2 (Phos. 0.035% max)	74.00
Philadelphia, deld.	82.27
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Warehouse Steel Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††^{5}	Structural Shapes	Carbon	Floor
Atlanta	8.59§	9.86§	....	....	8.64	9.01	10.68	....	9.05	8.97	10.90
Baltimore	8.28	8.88	9.61	....	8.76	9.06	11.34 #	15.18	9.19	8.66	10.14
Birmingham	8.18	9.45	11.07	....	8.23	8.60	10.57	....	8.64	8.56	10.70
Boston	9.38	10.44	11.45	53.50	9.42	9.73	12.90 #	15.28	9.63	9.72	11.20
Buffalo	8.40	9.00	10.07	55.98	8.50	8.80	10.90 #	15.00	8.90	8.90	10.45
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	...	8.88	8.80	10.66
Chicago	8.20	9.45	10.00	53.00	8.23	8.60	8.80	14.65	8.64	8.56	9.88
Cincinnati	8.34	9.48	10.05	52.43	8.54	8.92	9.31	14.96	9.18	8.93	10.21
Cleveland	8.18	9.45	9.95	52.33	8.33	8.69	10.80 #	14.74	9.01	8.79	10.11
Dallas	8.85	10.15	....	....	9.00	8.95	11.01	....	9.00	9.45	10.70
Denver	9.38	11.75	....	....	9.41	9.78	11.10	....	9.82	9.74	11.06
Detroit	8.43	9.70	10.35	56.50	8.58	8.90	9.15	14.91	9.18	8.91	10.13
Erie, Pa.	8.20	9.45	9.95^{10}	..	8.50	8.75	9.05^{10}	....	9.00	8.85	10.10
Houston	7.45	8.75	8.45	...	7.60	7.55	11.10	....	7.60	8.05	10.30
Jackson, Miss.	8.52	9.79	....	...	8.57	8.94	10.68	...	8.97	8.90	10.74
Los Angeles	7.85	10.75	11.65	57.60	7.80	7.95	12.00	...	7.85	7.80	9.95
Memphis, Tenn.	8.55	9.80	....	....	8.60	8.97	11.96 #	....	9.01	8.93	10.56
Milwaukee	8.33	9.58	10.13	....	8.36	8.73	9.03	14.78	8.85	8.69	10.01
Moline, Ill.	8.55	9.80	10.35	....	8.58	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	10.56	53.08	9.31	9.57	12.76 #	15.09	9.35	9.43	10.71
Norfolk, Va.	8.05	....	....	....	8.55	8.60	10.80	....	8.95	8.45	9.95
Philadelphia	8.00	8.90	9.87	52.69	8.69	8.65	11.51 #	15.01	8.50	8.77	9.77**
Pittsburgh	8.18	9.45	10.35	52.00	8.33	8.60	10.80 #	14.65	8.64	8.56	9.88
Portland, Oreg.	8.50	11.20	11.55	57.38	9.55	8.65	14.50	15.95	8.65	8.30	11.50
Richmond, Va.	8.45	....	10.40	....	9.15	9.15	....	....	9.40	8.85	10.35
St. Louis	8.54	9.79	10.36	....	8.59	8.97	9.41	15.01	9.10	8.93	10.25
St. Paul	8.79	10.04	10.61	....	8.84	9.21	9.66	....	9.38	9.30	10.49
San Francisco	9.35	10.75	11.00	55.10	9.45	9.70	13.00	16.10	9.50	9.60	12.00
Seattle	9.95	11.15	12.00	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	9.95	11.15	12.00	57.38	10.00	10.10	14.05	17.20	9.80	9.70	12.10
Washington	8.88	....	....	....	9.36	9.56	10.94	....	9.79	9.26	10.74

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*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **⅛ in. and heavier; ††as annealed; ‡‡over 4 in.; §§over 3 in.; #1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg. 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; ^{3}—400 to 9999 lb; ^{5}—1000 to 1999 lb; ^{8}—2000 to 3999 lb; ^{10}—2000 lb and over.

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., $135; Salina, Pa., $140; Niles, Ohio, $138; Cutler, Utah, $165.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Pa., New Savage, Md., St. Louis, $175; Stevens Pottery, Ga., $185; Cutler, Utah, $233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., $150; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $155; E. Chicago, Ind., Joliet, Rockdale, Ill., $160; Lehigh, Utah, $175; Los Angeles, $180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $160; E. Chicago, Ind., $167; Curtner, Calif., $182.

Semisilica Brick (per 1000)

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N. J., $135.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $235; Danville, Ill., $238; Philadelphia, Clearfield, Pa., $230; Orviston, Pa., $245.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $298; Philadelphia, Clearfield, Orviston, Pa., $305.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $338; Philadelphia, Clearfield, Orviston, Pa., $345.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.

Magnesite (per net ton)

Domestic, dead-burned, bulk ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅝ in. grains with fines: Baltimore, $73.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-41; 70%, $36.40; 60%, $33-36.50. Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $33-34; Mexican, all rail, duty paid, $25.25-25.75; barge, Brownsville, Tex., $27.25-27.75.

Ores

Lake Superior Iron Ore

(Prices effective for the 1957 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos.	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan, 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates	25.00-27.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	27.00-27.50
N. African hematite (spot)	nom.
Brazilian iron ore, 68-69%	28.00

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$13.00-14.00*
Domestic, concentrates f.o.b. milling points	20.00-22.00

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*Before duty.

Manganese Ore

Mn 46-48%, Indian (export tax included), $1.39-1.42 per long ton unit, c.i.f. U. S. ports, duty for buyer's account: other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian	
48% 3:1	$51.00-53.00
48% 2.8:1	48.00-50.00
48% no ratio	41.00-43.00
South African Transvaal	
48% no ratio	$40.00-41.00
44% no ratio	30.00-30.50
Turkish	
48% 3:1	$55.00-57.00
Domestic	
Rail nearest seller	
18% 3:1	$39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.18

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

55-60%	$2.50-2.60
60-65%	2.60-2.90

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metallurgical Coke

Price per net ton

Beehive Ovens	
Connellsville, Pa., furnace	$14.75-15.75
Connellsville, Pa., foundry	18.00-18.50
Oven Foundry Coke	
Birmingham, ovens	$28.85
Cincinnati, deld.	31.84
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, Mich., deld.	32.25
Saginaw, Mich., deld.	33.83
Erie, Pa., ovens	30.50
Everett, Mass., ovens:	
New England, deld.	31.55*
Indianapolis, ovens	29.75
Ironton, Ohio, ovens	29.00
Cincinnati, deld.	31.84
Kearny, N. J., ovens	29.75
Milwaukee, ovens	30.50
Neville Island (Pittsburgh), Pa., ovens	29.25
Painesville, Ohio, ovens	30.50
Cleveland, deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
St. Paul, ovens	29.75
Chicago, deld.	33.24
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

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*Or within $4.85 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzene	36.00
Toluene, one deg.	29.50
Industrial xylene	32.00-34.00
Per ton, bulk,ovens	
Ammonium sulfate	$32.00-34.00

Cents per pound, producing point

Phenol: Grade 1, 17.50; Grade 2-3, 15.50; Grade 4, 17.50; Grade 5, 16.50; Grade 6, 14.50.

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish:	
Deld. east of Mississippi River, ocean bags 23,000 lb and over	10.50
F.o.b. Riverton or Camden, N. J., west of Mississippi River	9.50
Sponge Iron, Domestic, 98 + % Fe:	
Deld. east of Mississippi River, 23,000 lb and over	10.50
F.o.b. Riverton, N. J., west of Mississippi River	9.50
Electrolytic Iron:	
Melting stock, 99.9% Fe, irregular fragments of ⅛ in. x 1.3 in.	28.00
Annealed, 99.5% Fe	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh)	29.00
Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	
Aluminum:	
Atomized, 500 lb drum, freight allowed	
Carlots	39.50
Ton lots	41.50
Antimony, 500 lb lots	42.00*
Brass, 5000-lb lots	31.30-38.40†
Bronze, 5000-lb lots	48.10-52.70†
Copper:	
Electrolytic	14.25*
Reduced	14.25*
Lead	7.50*
Manganese:	
Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel, unannealed	$1.065
Nickel-Silver, 5000-lb lots	49.20-61.30†
Phosphor-Copper, 5000-lb lots	59.80
Copper (atomized) 5000-lb lots	40.30-48.80‡
Silicon	47.50
Solder	7.00*
Stainless Steel, 304	$1.02
Stainless Steel, 316	$1.20
Tin	14.50*
Zinc, 5000-lb lots	17.50-30.70‡
Tungsten:	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over	3.15
Less than 1000 lb	3.30
Chromium, electrolytic 99.8% Cr min metallic basis	5.00

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*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	 Length	Per 100 lb
2	24	$60.75
2½	30	39.25
3	40	37.00
4	40	35.00
5½	40	34.75
6	60	31.50
7	60	28.25
8, 9, 10	60	28.00
12	72	26.75
14	60	26.75
16	72	25.75
17	60	26.25
18	72	26.25
20	72	25.25
24	84	26.00

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.68	$5.63	$5.68	$5.93
Bar Size Angles	5.98	5.93	5.98	6.23
Structural Angles	5.98	5.93	5.98	6.23
I-Beams	6.43	6.39	6.43	6.68
Channels	6.43	6.39	6.43	6.68
Plates (basic bessemer)	7.64	7.59	7.64	7.88
Sheets, H.R.	8.25	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	9.00	8.95	8.95	9.25
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	26.79	26.67	26.67	27.36
Barbed Wire (†)	6.95	6.95	6.95	7.40
Merchant Bars	6.37	6.32	6.37	6.61
Hot-Rolled Bands	7.20	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	6.73	6.73	6.73	7.13
Wire Rods, O.H. Cold Heading Quality No. 5	7.07	7.07	7.07	7.47
Bright Common Wire Nails (§)	8.12	8.12	8.12	8.32

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†Per 82 lb. net, reel. §Per 100-lb kegs, 20d nails and heavier.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx). Base price per net ton; $245, Johnstown, Duquesne, Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74% respectively. (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.50% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, 34c; 2000 lb to min carload, 36c; 500 lb to 1999 lb, 38c; 50 lb cans, add 0.5c per lb. Preminum for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2% from above prices. For 3% C grade Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38.43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $200 per ton ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $225 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.
Cr 67.71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.05c per lb of contained Cr. Packed, c.l. 31.65c, ton 33.45c, less ton 34.95c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8M x D, 21.25c, per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 27.50c per lb contained Cr, 14.20c per lb contained Si. 0.75" x down, 28.65c per lb contained Cr, 14.20c per lb contained Si. Delivered.

Chromium Metal Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ⅛" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.50 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si. Packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 14.20c per lb of contained Si. Packed c.l. 16.70c, ton lot 18.15c, less ton 19.80c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c; less ton 20.4c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 0.75% max Fe, 0.07% max Ca). C.l. lump, bulk, 22.00c per lb of Si. Packed, c.l. 23.65c, ton lot 24.95c, less ton 25.95c. Add 0.5c for max 0.03% Ca grade. Deduct 0.5c for max 1% Fe grade analyzing min 99.75% Si; 0.75c for max 1.25% Fe grades analyzing min 96.75% Si. Spot, add 0.25c.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 10.65c per lb of alloy; ton lot, packed, 11.8c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35%-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Bortam: (B 1.5-1.9%). Ton lot, 45c per lb; less than ton lot, 50c per lb.

Carbortam: (B 1 to 2%). Contract, lump, carload 9.50c, per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3⅝ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, carload packed in box pallets 19.80c, in bags 20.70c; 3000 lb to c.l. in box pallets 21.00c; 2000 lb to c.l. in bags, 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l., bags, 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c, 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload, bulk 7.7c per lb of briquet; packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l. bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c; (Small size—weighing approx 2½ lb and containing 1 lb of Si.) Carload, bulk 7.85c. Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l. pallets 9.65c; 2000 lb to c.l., bags, 10.65c; less ton 11.55c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.41 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $2.95 per lb of contained W; 2000 lb W to 5000 lb W, $3.05; less than 2000 lb W, $3.17. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8 % max, C 0.4% max). Contract, ton lot 2" x D, $4.90 per lb of contained Cb. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, $4.25 per lb of contained Cb plus Ta, delivered; less ton lot $4.30.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5.7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 5: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 19c per lb of alloy, ton lot 20.15c; less ton lot 21.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

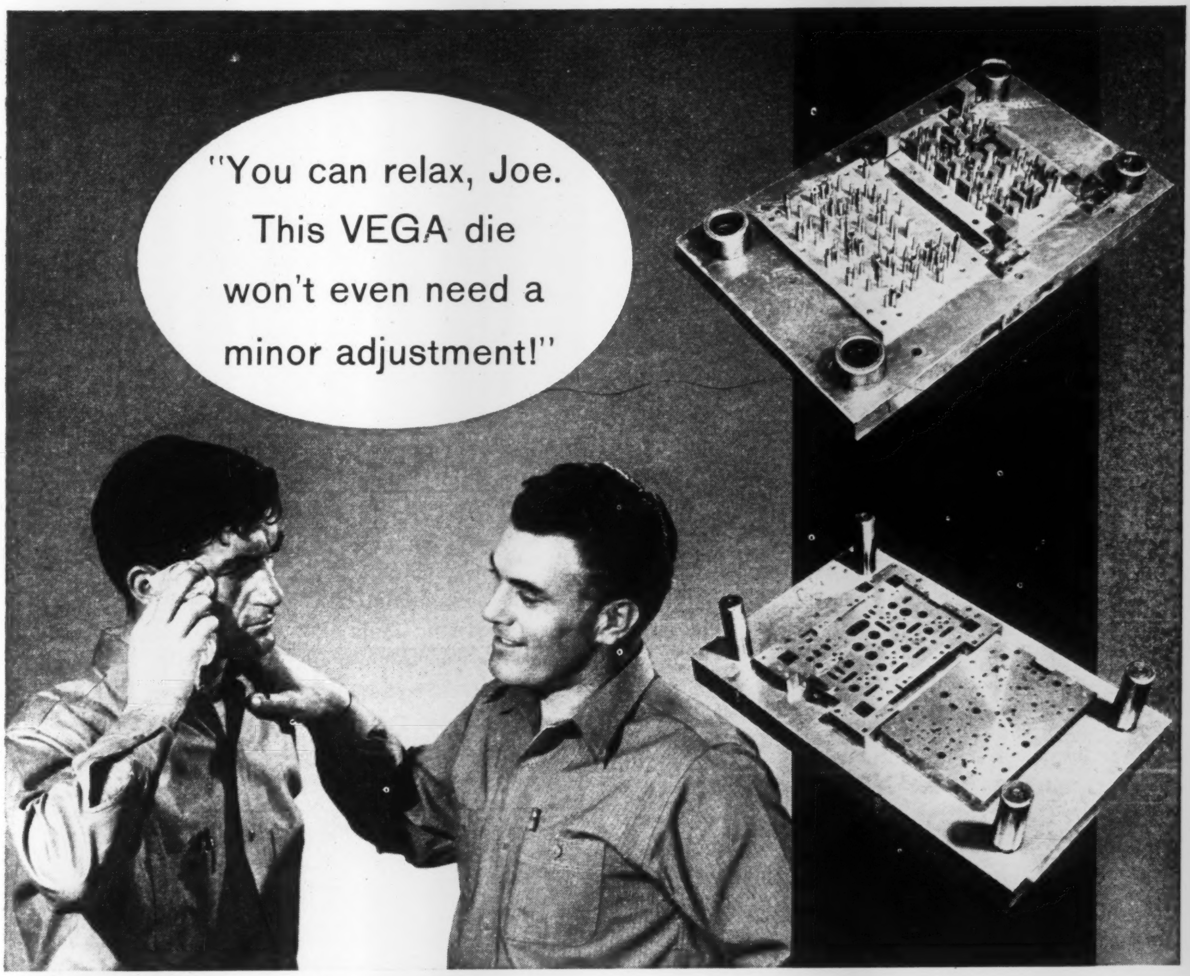
V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.1c per lb of alloy; ton lot 19.55c; less ton lot 20.8c, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 18.50c. Packed c.l. 19.50c, 2000 lb to c.l. 20.50c, less than 2000 lb 21c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carload, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $110 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. $1.68 in all sizes except powdered which is $1.74.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.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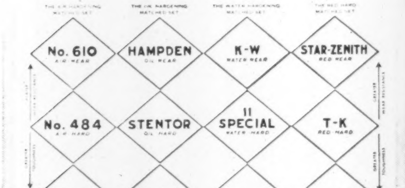
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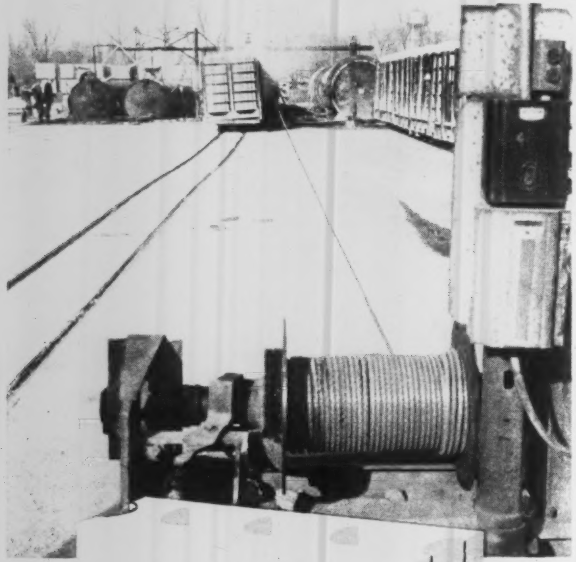

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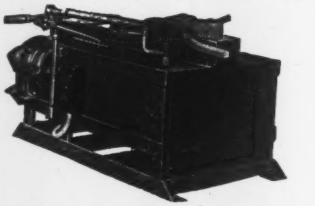

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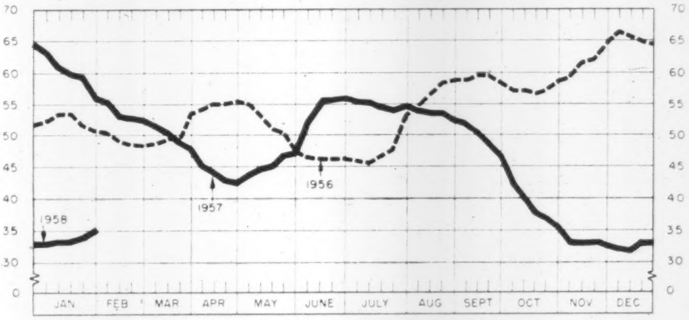


Jan. 29, 1958	Week Ago	Month Ago	Year Ago	Dec. Avg
$35.50	$34.25	$33.17	$56.00	$32.77

Rise in Scrap Prices Continuing

Recovery extended despite lagging mill buying. Broker covering of old orders is contributing support to market. STEEL's index on the prime grade rises another $1.25 to $35.50

Scrap Prices, Page 180

Pittsburgh — No. 1 factory bundles brought $1 a ton more on the month-end auto list, bringing the price on that grade to $36-$37. A similar rise in the price paid earlier for No. 1 busheling also gave added substance to broker and dealer bullishness. While no mill buying of No. 1 heavy melting is reported, the price on this grade is quoted up $1 a ton by brokers. Improved demand in adjacent areas and shrinking supplies are factors for strength.

Philadelphia — Spurred by increased export demand, the domestic scrap market here is stronger with prices higher on some of the major steel grades. No. 1 heavy melting, No. 1 bundles, and No. 1 busheling are stronger at $38.50, delivered. No. 2 heavy melting is up $1 to $35 and No. 2 bundles are up $1 to $28, delivered.

All other steel grades are unchanged, with these categories nominal: Electric furnace bundles, mixed borings and turnings, short shoveling turnings, machine shop turnings, and heavy turnings.

In the cast grades, heavy breakable is $1 higher at $40, delivered.

A base change in the freight rate of 40 cents a ton becomes effective Feb. 15.

New York—Scrap brokers have advanced their buying prices $1 a ton on all grades of heavy melting and bundled scrap. The market now is $35-$36 on No. 1 heavy melting and No. 1 bundles, $31-$32 on No. 2 heavy melting, $23-$24 on No. 2 bundles.

The higher prices reflect a stronger export market and slower collections. A number of small collectors have withdrawn from the market as they find present prices unattractive. Also, manufacturers scrap is available in smaller quantities.

All other grades of steel are unchanged, with prices largely nominal. Cast iron and stainless scrap prices are holding on limited purchases.

Chicago—New buying of scrap by the mills is almost at a standstill. Neverthless, the market continues to gather strength and prices are increasing. Two factors appear to be exerting influence on the market. One is that some upturn in steelmaking appears certain after February—this should enlarge demand for melting material. The other is the premium prices brokers are paying dealers for scrap to fill old orders. Old commitments are providing a fairly steady flow of material.

Scrap is not too plentiful. In the first place, it is being generated at a reduced rate as metalworking plants curtail operations. Secondly, collectors and dealers have been less active because of the low profit margin in the slow market.

Cleveland—The auto lists went at $1.50 to $2 a ton higher as January ended, but there has been no consumer buying of consequence in this district. Quoted prices are nominal, and the market appears to be edging up on dealer material. Reason: Higher broker offerings in the face of dealer resistance to low prices. Some No. 1 material, both dealer and factory, was recently sold in the Valley.

Detroit—The market here has moved up slightly in anticipation of some buying on auto lists. Several open orders for bundles are not being covered. Local dealers and brokers say the upward movement is speculative and is not based on sales.

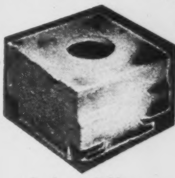
Buffalo—Dealers are having difficulty buying scrap to cover their current commitments. Supplies are drying up, and dealers hesitate to extend their short position.

Most observers anticipate an increase in prices this month, although low steel ingot production is likely to continue for some time. Only one local mill is taking in scrap, and it has large reserves.

A fairly good market for cast scrap continues.

Cincinnati—The market tone is

(*Please turn to Page* 185)

EUREKA FIRE BRICK WORKS
Works: Mt. Braddock, Fayette Co., Pa.
Dunbar, Pa. . . . 4213
COVERED HOT TOP BRICK
INGOT MOLD PLUGS

Sales Office
132 S. Whitfield St.
PITTSBURGH 6, PA. EM: 2-0614

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, Jan. 29, 1958. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Jan. 29	$35.50
Jan. 22	34.25
Dec. Avg.	32.77
Jan. 1957	58.96
Jan. 1953	43.00

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	*33.00-34.00*
No. 2 heavy melting	*31.00-32.00*
No. 1 factory bundles	*36.00-37.00*
No. 1 dealer bundles	*33.00-34.00*
No. 2 bundles	*29.00-30.00*
No. 1 busheling	*33.00-34.00*
Machine shop turnings	17.00-18.00
Mixed borings, turnings	17.00-18.00
Short shovel turnings	21.00-22.00
Cast iron borings	21.00-22.00
Cut structurals:	
2 ft and under	37.00-38.00
3 ft lengths	36.00-37.00
Heavy turnings	31.00-32.00
Punchings & plate scrap	36.00-37.00
Electric furnace bundles	36.00-37.00

Cast Iron Grades

No. 1 cupola	38.00-39.00
Stove plate	37.00-38.00
Unstripped motor blocks	26.00-27.00
Clean auto cast	42.00-43.00
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00-38.00
Rails, 2 ft and under	55.00-56.00
Rails, 18 in. and under	56.00-57.00
Angles, splice bars	46.00-47.00
Rails, rerolling	56.00-57.00

Stainless Steel Scrap

18-8 bundles & solids	195.00-200.00
18-8 turnings	95.00-100.00
430 bundles & solids	95.00-100.00
430 turnings	50.00-55.00

CLEVELAND

No. 1 heavy melting	*29.00-30.00*
No. 2 heavy melting	21.00-22.00
No. 1 factory bundles	*33.00-34.00*
No. 1 bundles	*29.00-30.00*
No. 2 bundles	*22.00-23.00*
No. 1 busheling	*29.00-30.00*
Machine shop turnings	11.00-12.00
Short shovel turnings	15.00-16.00
Mixed borings, turnings	15.00-16.00
Cast iron borings	15.00-16.00
Cut foundry steel	32.00-33.00
Cut structurals, plates 2 ft and under	*40.00-41.00*
Low phos. punchings & plate	*30.00-31.00*
Alloy free, short shovel turnings	19.00-20.00
Electric furnace bundles	29.00-30.00

Cast Iron Grades

No. 1 cupola	*42.00-43.00*
Charging box cast	34.00-35.00
Heavy breakable cast	32.00-33.00
Stove plate	39.00-40.00
Unstripped motor blocks	24.00-25.00
Brake shoes	*32.00-33.00*
Clean auto cast	43.00-44.00
Burnt cast	29.00-30.00
Drop broken machinery	*45.00-46.00*

Railroad Scrap

No. 1 R.R. heavy melt.	33.50-34.50
R.R. malleable	55.00-56.00
Rails, 2 ft and under	55.00-56.00
Rails, 18 in. and under	56.00-57.00
Rails, random lengths	48.00-49.00
Cast steel	45.00-46.00
Railroad specialties	*49.00-50.00*
Uncut tires	39.00-40.00
Angles, splice bars	*49.00-50.00*
Rails, rerolling	54.00-55.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	160.00-165.00
18-8 turnings	90.00-95.00
430 clips, bundles, solids	75.00-80.00
430 turnings	40.00-50.00

YOUNGSTOWN

No. 1 heavy melting	30.00-31.00
No. 2 heavy melting	23.00-24.00
No. 1 bundles	30.00-31.00
No. 2 bundles	24.00-25.00
No. 1 busheling	30.00-31.00
Machine shop turnings	13.00-14.00
Short shovel turnings	17.00-18.00
Cast iron borings	17.00-18.00
Low phos.	*35.00-36.00*
Electric furnace bundles	35.00-36.00

Railroad Scrap

No. 1 R.R. heavy melt.	36.50-37.50

CHICAGO

No. 1 heavy melt., indus.	*35.00-36.00*
No. 1 hvy melt., dealer	*33.00-34.00*
No. 2 heavy melting	*32.00-33.00*
No. 1 factory bundles	*37.00-38.00*
No. 1 dealer bundles	*33.00-34.00*
No. 2 bundles	*24.00-25.00*
No. 1 busheling, indus.	*35.00-36.00*
No. 1 busheling, dealer	*33.00-34.00*
Machine shop turnings	*18.00-19.00*
Mixed borings, turnings	*20.00-21.00*
Short shovel turnings	*20.00-21.00*
Cast iron borings	*20.00-21.00*
Cut structurals, 3 ft	*44.00-45.00*
Punchings & plate scrap	*45.00-46.00*

Cast Iron Grades

No. 1 cupola	*42.00-43.00*
Stove plate	*37.00-38.00*
Unstripped motor blocks	*33.00-34.00*
Clean auto cast	45.00-46.00
Drop broken machinery	45.00-46.00

Railroad Scrap

No. 1 R.R. heavy melt.	*38.00-39.00*
R.R. malleable	*52.00-53.00*
Rails, 2 ft and under	*56.00-57.00*
Rails, 18 in. and under	*57.00-58.00*
Angles, splice bars	*51.00-52.00*
Axles	*53.00-54.00*
Rails, rerolling	*53.00-54.00*

Stainless Steel Scrap

18-8 bundles & solids	*160.00-165.00*
18-8 turnings	*85.00-90.00*
430 bundles & solids	*90.00-100.00*
430 turnings	47.50-52.50

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*23.00-24.00*
No. 2 heavy melting	*18.00-19.00*
No. 1 bundles	*23.00-24.00*
No. 2 bundles	*17.00-18.00*
No. 1 busheling	*20.00-21.00*
Machine shop turnings	7.00-8.00
Mixed borings, turnings	8.00-9.00
Short shovel turnings	9.00-10.00
Punchings & plate scrap	*27.00-28.00*

Cast Iron Grades

No. 1 cupola	29.00
Stove plate	*24.00*
Charging box cast	23.00
Heavy breakable	22.00
Unstripped motor blocks	*15.00*
Clean auto cast	*31.00*
Malleable	31.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	32.00
No. 2 heavy melting	29.00
No. 1 bundles	32.00
No. 2 bundles	22.00†
No. 1 busheling	*32.00†*
Machine shop turnings	*16.00*
Short shovel turnings	*18.00*

Cast Iron Grades

No. 1 cupola	42.00
Charging box cast	32.00
Heavy breakable cast	32.00
Unstripped motor blocks	32.00
Clean auto cast	44.00
Stove plate	*39.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*36.00*
Rails, 18 in. and under	*51.00*
Rails, random lengths	45.00
Rails, rerolling	*52.00*
Angles, splice bars	*47.00*

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†Nominal

PHILADELPHIA

No. 1 heavy melting	*38.50*
No. 2 heavy melting	*35.00*
No. 1 bundles	*38.50*
No. 2 bundles	*28.00*
No. 1 busheling	*38.50*
Electric furnace bundles	38.50†
Mixed borings, turnings	22.50†
Short shovel turnings	24.00†
Machine shop turnings	22.00†
Heavy turnings	31.00†
Structurals & plate	40.00-41.00
Couplers, springs, wheels	46.00
Rail crops, 2 ft & under	58.00-60.00

Cast Iron Grades

No. 1 cupola	38.00
Heavy breakable cast	*40.00*
Malleable	56.00
Drop broken machinery	49.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*35.00-36.00*
No. 2 heavy melting	*31.00-32.00*
No. 1 bundles	*35.00-36.00*
No. 2 bundles	*23.00-24.00*
Machine shop turnings	11.00-12.00
Mixed borings, turnings	12.00-13.00
Short shovel turnings	14.00-15.00
Low phos. (structurals & plate)	45.00-46.00

Cast Iron Grades

No. 1 cupola	34.00-35.00
Unstripped motor blocks	32.00
Heavy breakable	32.00-33.00

Stainless Steel

18-8 sheets, clips, solids	150.00
18-8 borings, turnings	50.00
410 sheets, clips, solids	60.00-65.00
430 sheets, clips, solids	75.00-80.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*26.00-27.00*
No. 2 heavy melting	*23.00-24.00*
No. 1 bundles	*26.00-27.00*
No. 2 bundles	17.50-18.00
No. 1 busheling	*25.00-26.00*
Machine shop turnings	9.50-10.00†
Mixed borings, turnings	9.50-10.00
Short shovel turnings	11.00-11.50†
No. 1 cast	29.00-30.00
Mixed cupola cast	28.00-29.00
No. 1 machinery cast	35.00-36.00

BUFFALO

No. 1 heavy melting	28.00-29.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	28.00-29.00
No. 2 bundles	23.00-24.00
No. 1 busheling	28.00-29.00
Mixed borings, turnings	14.00-15.00
Machine shop turnings	12.00-13.00
Short shovel turnings	15.00-16.00
Cast iron borings	14.00-15.00
Low phos.	32.00-33.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	36.00-37.00
No. 1 machinery	41.00-42.00

Railroad Scrap

Rails, random lengths	39.00-40.00
Rails, 3 ft and under	46.00-47.00
Railroad specialties	33.00-34.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	28.00-29.00
No. 2 heavy melting	*24.00-25.00*
No. 1 bundles	28.00-29.00
No. 2 bundles	*23.00-24.00*
No. 1 busheling	28.00-29.00
Machine shop turnings	13.00-14.00
Mixed borings, turnings	15.00-16.00
Short shovel turnings	16.00-17.00
Cast iron borings	15.00-16.00
Low phos. 18 in.	36.00-37.00

Cast Iron Grades

No. 1 cupola	*38.00-39.00*
Heavy breakable cast	33.00-34.00
Charging box cast	33.00-34.00
Drop broken machinery	47.00-48.00

Railroad Scrap

No. 1 R.R. heavy melt.	33.00-34.00
Rails, 18 in. and under	*53.00-54.00*
Rails, random lengths	*43.00-44.00*

BIRMINGHAM

No. 1 heavy melting	29.00-30.00
No. 2 heavy melting	26.00-27.00
No. 1 bundles	31.00-32.00
No. 2 bundles	*17.00-18.00*
No. 1 busheling	31.00-32.00
Cast iron borings	12.00-13.00
Short shovel turnings	23.00-24.00
Machine shop turnings	22.00-23.00
Bar crops and plates	*40.00-41.00*
Structurals & plate	39.00-40.00
Electric furnace bundles	36.00-37.00
Electric furnace:	
2 ft and under	*35.00-36.00*
3 ft and under	*34.00-35.00*

Cast Iron Grades

No. 1 cupola	49.00-50.00
Stove plate	48.00-49.00
Unstripped motor blocks	39.00-40.00
Charging box cast	22.00-23.00
No. 1 wheels	37.00-38.00

Railroad Scrap

No. 1 R.R. heavy melt.	34.00-35.00
Rails, 18 in. and under	48.00-49.00
Rails, rerolling	*44.00-45.00*
Rails, random lengths	41.00-42.00
Angles, splice bars	42.00-43.00

SEATTLE

No. 1 heavy melting	30.00
No. 2 heavy melting	28.00
No. 1 bundles	*24.00*
No. 2 bundles	21.00
Machine shop turnings	22.00
Mixed borings, turnings	22.00
Electric furnace No. 1	38.00

Cast Iron Grades

No. 1 cupola	31.00
Heavy breakable cast	28.00
Unstripped motor blocks	23.00
Stove plate (f.o.b. plant)	21.00

LOS ANGELES

No. 1 heavy melting	36.00
No. 2 heavy melting	34.00
No. 1 bundles	32.00
No. 2 bundles	24.00
Machine shop turnings	12.00
Shoveling turnings	15.00
Cast iron borings	15.00
Cut structurals and plate 1 ft and under	48.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	41.00

Railroad Scrap

No. 1 R.R. heavy melt.	36.00

SAN FRANCISCO

No. 1 heavy melting	*32.00*
No. 2 heavy melting	*30.00*
No. 1 bundles	30.00
No. 2 bundles	*22.00*
Machine shop turnings	*15.00*
Mixed borings, turnings	*15.00*
Cast iron borings	*15.00*
Heavy turnings	*15.00*
Short shovel turnings	*15.00*
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	*40.00*
Charging box cast	*34.00*
Stove plate	*34.00*
Heavy breakable cast	*28.00*
Unstripped motor blocks	*31.00*
Clean auto cast	*40.00*
Drop broken machinery	*40.00*
No. 1 wheels	*34.00*

HAMILTON, ONT.

No. 1 heavy melting	32.00
No. 2 heavy melting	27.00
No. 1 bundles	32.00
No. 2 bundles	22.00
Mixed steel scrap	27.00
Mixed borings, turnings	17.00
Busheling, new factory:	
Prepared	32.00
Unprepared	26.00
Short steel turnings	21.00

Cast Iron Grades†

No. 1 machinery cast	45.00-50.00

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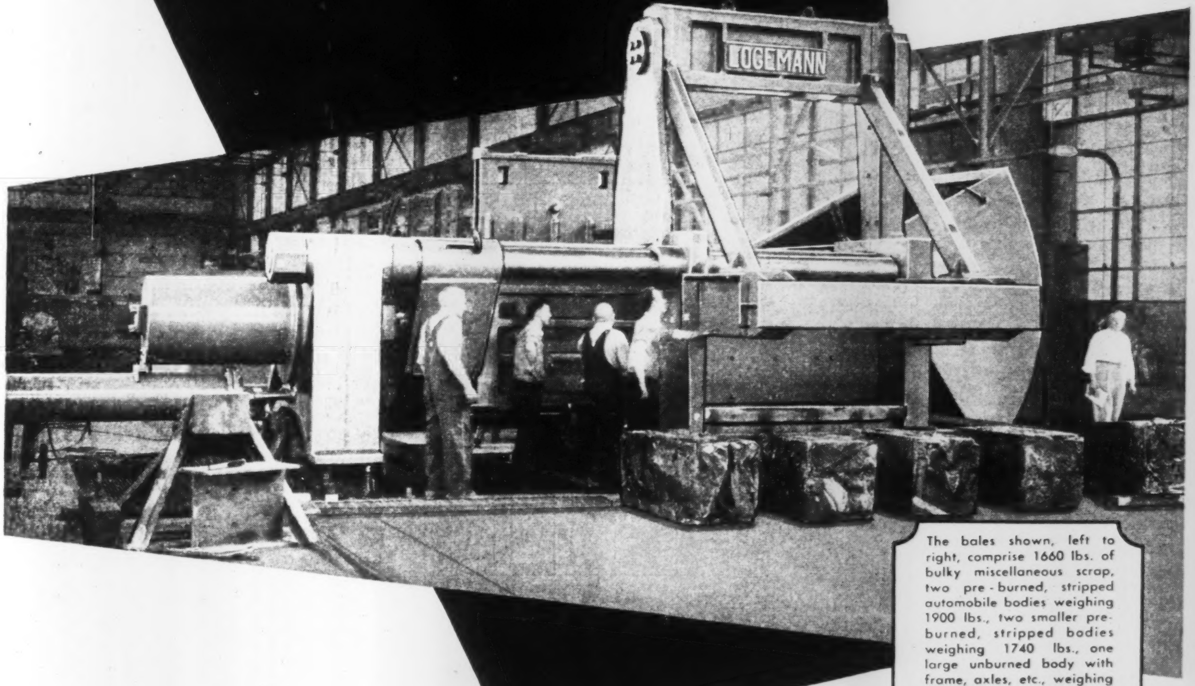
†F.o.b. Hamilton, Ont.

LOGEMANN *presents*

the new giant triple-compression 4000-P Series of

SCRAP PRESSES



The bales shown, left to right, comprise 1660 lbs. of bulky miscellaneous scrap, two pre-burned, stripped automobile bodies weighing 1900 lbs., two smaller pre-burned, stripped bodies weighing 1740 lbs., one large unburned body with frame, axles, etc., weighing 2280 lbs., and another unburned lighter body with frame, axles, etc., weighing 2020 lbs.

- **Bale Densities are Extremely High!**
- **Giant Press Box is 20 ft. x 7 ft. x 5 ft.**
- **Two 150 HP Pumps Generate Hydraulic Pressure**

In this Logemann Scrap Press compressed bales measure 24 inches by 24 inches by a variable third dimension which is determined by the character and quantity of scrap charged. The first or gathering ram compresses the load of scrap from 20 ft. to 2 ft. . . . the intermediate side ram reduces the cross-dimension from 7 ft to 2 ft. . . . finally the third or finishing ram moves upward, to compress the vertical dimension into an extremely dense bale, ready for remelting. The cover is then withdrawn and the finishing ram elevates the compressed bale level with the top of the box, to allow the cover to push it off for loading into cars.

Two large 150 HP pumps generate hydraulic pressure for operating the press-rams at high pressures. Three smaller pumps are used to operate the press cover and the loading hopper. This hopper can be filled with miscellaneous scrap while the press is making a bale, and then dumped quickly into the box as soon as the preceding bale has been discharged.

The large pumps give rapid movement to all rams, and to handle their fluid delivery the operating-valves are proportionately over-size. These valves are operated by compressed air and easily controlled from a remote stand, through a bank of electrical switches and push-buttons, in front of the operator.

This same press can be used for baling bodies and extremely bulky scrap, also for making standard size, high-density bales of new sheet clips.

We are prepared to build many smaller sizes or larger, if required, to meet your specific requirements. You are invited to present your problem for discussion.

Write for details about the newly developed 3500-P series with tamping cover and side bale ejection and the new giant double compression press with box 20 ft. long, 7½ ft. wide, and 5 ft. deep.

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Stockpiling Coming to End

Tariff Commission expected to raise lead, zinc duties to the maximum. GSA will probably pull out of the market shortly after. Anaconda cuts Chilean copper production 10 per cent

Nonferrous Metal Prices, Pages 184 & 185

LEAD AND ZINC industry officials feel they are about to pass out of one era right into another—from government support through stockpiling to government protection through higher tariffs.

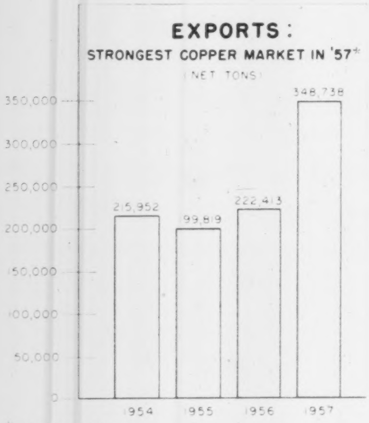
Last week, the General Services Administration made its usual monthly call for offers of lead and zinc for the stockpile. Producers answered this call with a feeling that they wouldn't be doing it much longer. They are confident that the Tariff Commission is going to recommend the maximum rate increase allowed under the escape clause of the Tariff Act. But they know they can't have their cake and eat it too. Stockpiling will cease. GSA may make one more call after the commission submits its report.

Stalling — Many observers in Washington and in the industry feel that the Tariff Commission could report its decision tomorrow if it wanted to. One industry official thinks the commission, which was badgered from every side during the hearings, is reacting against this pressure by refusing to be rushed into a premature disclosure of its findings.

The report is not likely to come before the end of this quarter. When it does, it will recommend that the zinc tariff be raised from the present 0.7 cent to 2.1 cents a pound, and the lead duty be upped from 1.0625 to 2.55 cents a pound.

How much this will help is open to question because foreign producers are already discounting this higher tariff rate. For example, last week lead was quoted at a bid price of 8.98 cents on the London Metal Exchange. Add the current tariff and 0.75 cent freight charge and you get 10.79 cents a pound, compared with the domestic price of 13 cents, New York. The new tariff would raise the foreign equivalent price to only 12.28 cents a pound.

Even though higher rates have been favored by the administration in this case, it is not at all certain that the President is convinced he should follow the commission's lead. He has set up a special advisory committee, headed by Commerce Secretary Sinclair Weeks, to check the commission's decisions. Mr. Weeks is not a firm protectionist by any means, so don't expect the committee to rubber stamp the commission's decisions.



*Refined copper only
Source: Business & Defense Services Administration

On the Sidelines—Consumers are taking the wait and see attitude. There will be no inventory buying until the tariff issue is settled. Foreign and domestic metal is easy to get; imports are penetrating as far inland as Chicago.

Special high grade zinc sales are holding up pretty well, but galvanizers are still slow to order. Some steel companies have stepped up ordering slightly, but it is nothing like a trend yet. Zincmen are keeping an eye on the contract maneuvering in the auto industry. They feel that if strike signs become prominent, diecasters will come in for heavier tonnages late this quarter or early in the third to stock parts.

Chilean Cutbacks Settled

The recent conferences between American producers and the Chilean government will not have much immediate effect on the copper market, but for the long pull, it's a step in the right direction. The net result of the meetings was the immediate cutback of 10 per cent by Andes Copper Mining Co. and Chile Exploration Co., subsidiaries of Anaconda Co. This would amount to 31,000 tons a year.

Kennecott Copper Corp., the other large producer in Chile, had previously announced substantial cuts in its domestic operations. This apparently satisfied the Chile Copper Department's desire to cut back on world production of the red metal, so Kennecott did not reduce its Braden Mine production. A 10 per cent cutback there would have meant about 18,000 tons a year.

NONFERROUS PRICE RECORD

	Price Jan. 29	Last Change	Previous Price	Dec. Avg	Nov. Avg	Jan., 1957 Avg
Aluminum ..	26.00	Aug. 1, 1957	25.00	26.000	26.000	25.000
Copper	24.00-25.00	Jan. 21, 1958	24.50-25.00	26.130	26.217	35.433
Lead	12.80	Dec. 2, 1957	13.30	12.800	13.300	15.800
Magnesium .	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	93.625	Jan. 29, 1958	93.50	92.395	89.288	101.480
Zinc	10.00	July 1, 1957	10.50	10.000	10.000	13.500

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

GET THE MOST a ferrochromium alloy can offer with EXLO®. . . high chromium-carbon ratio · controlled low silicon content · high density · exceptional cleanliness · extra low carbon content (.025% and .05% max. grades).

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Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 26.00; ingots, 28.10, 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 29.90; No. 43, 29.70; No. 195, 31.30; No. 241, 31.50; No. 356, 29.90, 30-lb ingots.

Antimony: R.M.M. brand, 99.5%, 33.00; Lone Star brand, 33.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 25.50-26.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per ton, ton lots.

Cadmium: Sticks and bars, $1.55 per lb deld.

Cobalt: 97-99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $55-90 per lb, nom.

Copper: Electrolytic, 25.00 deld.; custom smelters, 24.00; lake, 25.00 deld.; fire refined, 24.75 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $70-90 nom. per troy oz.

Lead: Common, 12.80; chemical, 12.90; corroding, 12.90, St. Louis. New York basis, add 0.20.

Lithium: 98 + %, 50-100 lb, cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire, $15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $220-225, per 76-lb flask.

Molybdenum: Unalloyed, turned extrusions, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter, 71.25 per lb of nickel content before 1 cent freight allowance, f.o.b. Copper Cliff, Ont.

Osmium: $70-100 per troy oz nom.

Palladium: $19-21 per troy oz.

Platinum: $76-80 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $7.50 per lb, commercial grade.

Silver: Open market, 88.625 per troy oz.

Sodium: 16.50, c.l.; 17.00 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot, 93.625; prompt, 93.50.

Titanium: Sponge, 99.3+%, grade A-1 ductile (0.3% Fe max.), $2.25; grade A-2 (0.5% Fe max.), $2.00 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99+% hydrogen reduced, $3.85.

Zinc: Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 11.35; special high grade, 11.75 deld. Diecasting alloy ingot No. 3, 14.25; No. 2, 15.25; No. 5, 14.75 deld.

Zirconium: Sponge, commercial grade, $5-10 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.25-25.50; No. 12 foundry alloy (No. 2 grade), 21.25-23.25; 5% silicon alloy, 0.60 Cu max., 25.00-26.25; 13 alloy, 0.60 Cu max., 25.00-26 25; 195 alloy, 24.25-27.00; 108 alloy, 21.75-23.25. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.25; grade 2, 21.50; grade 3, 20.25; grade 4, 18.25.

Brass Ingot: Red brass, No. 115, 25.75; tin bronze, No. 225, 34.50; No. 245, 29.25; high-leaded tin bronze, No. 305, 29.75; No. 1 yellow, No. 405, 21.25; manganese bronze, No. 421, 23.00.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.80, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.78, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 30,000-lb lots, 30.355; l.c.l., 30.98. Weatherproof, 30,000-lb lots, 32.53; l.c.l., 33.28. Magnet wire deld., 38.43, before quantity discounts.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $18.50 per cwt; pipe, full coils, $18.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $9.50-15.95; sheared mill plate, $8.00-11.50; wire, $7.50-11.50; forging billets, $6.00-7.60; hot-rolled and forged bars, $6.15-7.90.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 20.50; plates 19.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.00-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strips, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R...	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100 and 3003 mill finish (30,000 lb base; freight allowed).

Thickness Range Inches	Flat Sheet	Coiled Sheet
0.249-0.136	43.10-47.60	....
0.135-0.096	43.60-48.70	40.50-41.10
0.095-0.077	44.30-50.50	40.60-41.30
0.076-0.061	44.90-52.80	40.80-42.00
0.060-0.048	45.60-55.10	41.40-43.10
0.047-0.038	46.20-57.90	41.90-44.50
0.037-0.030	46.60-62.90	42.30-46.30
0.029-0.024	47.20-54.70	42.60-47.00
0.023-0.019	48.20-58.10	43.70-45.40
0.018-0.017	49.00-55.40	44.30-46.00
0.016-0.015	49.90-56.30	45.10-46.80
0.014	50.90	46.10-47.80
0.013-0.012	52.10	46.80
0.011	53.10	48.00
0.010-0.0095	54.60	49.40
0.009-0.0085	55.90	50.90
0.008-0.0075	57.50	52.10
0.007	59.00	53.60
0.006	60.60	55.00

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.70	47.50
5050-F	43.80	48.60
3004-F	44.80	50.50
5052-F	44.40	51.20
6061-T6	46.90	53.00
2024-T4	50.60	57.40
7075-T6*	58.40	66.00

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats	Round		Hexagonal	
	2011-T3	2017-T4	2011-T3	2017-T4
Drawn				
0.125	78.20	75.20	....	....
0.156-0.172	66.20	63.40	....	....
0.188	66.20	63.40	....	81.60
0.219-0.234	63.00	61.50	....	....
0.250-0.281	63.00	61.50	....	77.90
0.313	63.00	61.50	....	74.20
0.344	62.50	....	....	....
Cold-Finished				
0.375-0.547	62.50	61.30	74.80	69.80
0.563-0.688	62.50	61.30	71.10	65.50
0.719-1.000	61.00	59.70	64.90	61.70
1.063	61.00	59.70	....	59.60
1.125-1.500	58.60	57.40	62.80	59.60
Rolled				
1.563	57.00	55.70	....	....
1.625-2.000	56.30	54.90	....	57.50
2.125-2.500	54.80	53.40	....	....
2.563-3.375	53.20	51.70	....	....

Forging Stock: Round, Class 1, random lengths: 2014-F, 46.90-53.90, diam. 1-8 in.; 6061-F, 43.50-53.90, diam. 1-6 in.; 7075-F, 63.50-73.90, diam. 1-3.875 in.; 7079-F, 68.50-78.90, diam. 1-3.875 in.

Pipe: ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000-lb base, per 100 ft.

Nom. Pipe Size (in.)		Nom. Pipe Size (in.)	
¾	$19.40	2	$ 59.90
1	30.50	4	165.05
1¼	41.30	6	296.10
1½	49.40	8	445.55

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	45.40-47.00	60.60-64.80
12-14	45.70-47.20	61.30-65.80
15-17	45.90-47.90	62.50-67.50
18-20	46.50-48.30	64.50-70.10

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grade, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.70; .25-.75 in., 70.60-71.60. Tooling plate, .25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

Aluminum: 1100 clippings, 13.50-14.00; old sheets, 10.50-11.00; borings and turnings, 6.50-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	48.13b	45.36c	....	48.32	21.000	21.000	20.250
Yellow Brass	42.69	31.03d	43.23	45.60	16.125	15.875	14.500
Low Brass, 80%	44.90	44.84	45.44	47.71	17.875	17.625	17.125
Red Brass, 85%	45.67	45.61	46.21	48.48	18.625	18.375	17.875
Com. Bronze, 90%	46.98	46.92	47.52	49.54	19.250	19.000	18.500
Manganese Bronze	50.73	44.91	55.44	....	15.000	14.750	14.125
Muntz Metal	45.19	41.00	....	....	15.125	14.875	14.375
Naval Brass	47.07	41.38	54.13	50.48	14.875	14.625	14.125
Silicon Bronze	52.84	52.03	52.88	58.18	20.625	20.375	19.625
Nickel Silver, 10%	57.93	60.26	60.26	....	21.125	20.875	10.562
Phos. Bronze, A-5% ...	67.17	67.67	67.67	68.85	21.875	21.625	20.625

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, or any or all kinds of scrap, add 1 cent per lb.

7.00; crankcases, 10.50-11.00; industrial castings, 10.50-11.00.

Copper and Brass: No. 1 heavy copper and wire, 17.00-17.50; No. 2 heavy copper and wire, 15.00-15.50; light copper, 13.00-13.50; No. 1 composition red brass, 14.50-15.00; No. 1 composition turnings, 13.50-14.00; new brass clippings, 12.50-13.00; light brass, 8.50-9.00; heavy yellow brass, 11.00-11.50; new brass rod ends, 11.50-12.00; auto radiators, unsweated, 11.00-11.50; cocks and faucets, 11.50-12.00; brass pipe, 12.00-12.50.

Lead: Heavy, 8.25-8.75; battery plates, 3.50-3.75; linotype and stereotype, 10.50-11.00; electrotype, 9.50-10.00; mixed babbitt, 10.50-11.00.

Monel: Clippings, 28.00-29.00; old sheets, 25.00-26.00; turnings, 20.00-23.00; rods, 28.00-29.00.

Nickel: Sheets and clips, 42.00-45.00; rolled anodes, 42.00-45.00; turnings, 37.00-40.00; rod ends, 42.00-45.00.

Zinc: Old zinc, 3.00-3.25; new diecast scrap, 2.75-3.00; old diecast scrap, 1.50-1.75.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 1100 clippings, 16.00-16.25; 3003 clippings, 16.00-16.25; 6151 clippings, 15.50-16.25; 5052 clippings, 15.50-15.75; 2014 clippings, 15.00-15.75; 2017 clippings, 15.00-15.75; 2024 clippings, 15.00-15.75; mixed clippings, 14.50-14.75; old sheets, 12.25-12.50; old cast, 12.25-12.50; clean old cable (free of steel), 15.25-15.50; borings and turnings, 12.75-13.75.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 51.00; light scrap, 46.00; turnings and borings, 31.00.

Copper and Brass: No. 1 heavy copper and wire, 19.50; No. 2 heavy copper and wire, 17.50; light copper, 15.25; refinery brass (60% copper) per dry copper content, 17.25.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 19.50; No. 2 heavy copper and wire, 17.50; light copper, 15.25; No. 1 composition borings, 16.50; No. 1 composition solids, 17.00; heavy yellow brass solids, 11.50; yellow brass turnings, 10.50; radiators, 13.00.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.70 per lb.

Copper: Flat-rolled, 41.79; oval, 40.00, 5000-10,000 lb; electrodeposited, 31.25, 2000-5000 lb lots; cast, 36.25, 5000-10.000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 10-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30.000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 112.50; 200-499 lb, 111.00; 500-999 lb, 110.50; 1000 lb or more, 110.00.

Zinc: Balls, 17.50; flat tops, 17.50; flats, 19.25; ovals, 18.50, ton lots.

CHEMICALS

Cadmium Oxide: $1.70 per lb in 100-lb drums.

Chromic Acid: 100 lb, 33.30; 500 lb, 32.80; 2000 lb, 32.15; 5000 lb, 31.80; 10.000 lb, 31.30; f.o.b. Detroit.

Copper Cyanide: 100-200 lb, 71.60; 300-900 lb, 69.60.

Copper Sulphate: 100-1900 lb, 13.70; 2000-5900 lb, 11.70; 6000-11,900 lb, 11.45; 12,000-22,900 lb, 11.20; 23.000 lb or more, 10.70.

Nickel Chloride: Less than 400 lb, 35.00; 400-9999 lb, 33.00; 10.000 lb, 32.50.

Nickel Sulphate: 5000-22.000 lb, 33.50; 23.000-35,900 lb, 33.00; 36.000 lb or more, 32.50.

Sodium Cyanide: 100 lb, 27.60; 200 lb, 25.90; 400 lb, 22.90; 1000 lb, 21.90; f.o.b. Detroit.

Sodium Stannate: Less than 100 lb, 75.20; 100-600 lb, 66.20; 700-1900, 63.50; 2000-9900 lb, 61.60; 10,000 lb or more, 60.30.

Stannous Chloride (anhydrous): Less than 25 lb, 164.70; 25 lb, 129.70; 100 lb, 114.70; 400 lb, 112.20; 5200-19,600 lb, 100.00; 20,000 lb or more, 87.80.

Stannous Sulphate: Less than 50 lb, 127.50; 50 lb, 97.50; 100-1900 lb, 95.50; 2000 lb or more, 93.50.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(Concluded from Page 179)

firmer here. It's due more to a reaction to the low prices that have been quoted recently than to improved consumption. Brokers have raised their buying prices a little in filling old orders, seeking to overcome dealer resistance. Mill inventories are ample.

St. Louis—Scrap trading is slow here. The mills hold stocks up to 90 days and are not placing new orders. Low prices have dried up country collections, but industrial material is still coming onto the market. Foundry requirements are slightly heavier. A flurry of interest in railroad scrap is noted.

Birmingham — Scrap is moving slowly in this district, but exports are showing some signs of improvement. Exporters are offering $2 to $3 a ton over previous quotations.

The market for open-hearth grades appears firm, but brokers report difficulty in covering their commitments. Dealers are unwilling to sell at the present low prices, and the mills are refusing to up their offers.

Some cast iron and electric fur-

STEEL EXECUTIVE

Unusual position available to executive thoroughly experienced in steel price structure, steel pricing methods and policies, as practiced in an integrated steel company. Challenging opportunity to apply this background in the study and installation of a similar structure in another industry. Require broad experience at policy-making level. We prefer permanent employment but will consider consulting arrangement. Reply, giving complete details of qualifications to Box 636, STEEL, Penton Bldg., Cleveland 13, Ohio.

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CLASSIFIED

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SALES ENGINEER

Long established and well known eastern Forge Shop and Steel Foundry specializing in open die forgings and heavy steel castings desires to employ Sales Engineer for Eastern District Office. Applicant should be between the ages of 27 and 35, college education preferred and with some sales experience in forging and casting industry or allied fields. Successful applicant for this very desirable position will be given several months training at plant before assuming position in the field. Write Box No. 634, STEEL, Penton Bldg., Cleveland 13, Ohio.

GENERAL SUPERINTENDENT

Small, financially strong Ohio steel plate and alloy fabricating plant with long record of profitable operation has opening for man of highest type. Permanent position with unlimited opportunity for growth. Must be thoroughly experienced in code welding practice, maintenance costs and general shop procedure. Enclose photograph and give full experience with references and salary bracket expected. Only fully qualified with no fear of hard work need apply. All replies strictly confidential. Write Box No. 635, STEEL, Penton Bldg., Cleveland 13, Ohio.

Positions Wanted

SALES EXECUTIVE: For Alloy Plate Fabrication, graduate engineer with a twenty year background in production, engineering and sales management of custom built chemical process equipment primarily in the alloys. Seek new challenge in N. Y., N. J. or Pa. area. Write Box 626, STEEL, Penton Bldg., Cleveland 13, Ohio.

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nace grades were bought last week, but purchases were small.

San Francisco—The steel scrap market is weak. Prices are down $1 to $2 a ton. Mills are buying little, and exports are negligible. The outlook is for more of the same.

Los Angeles—The local scrap market situation is unchanged. There is little turnover, with most consumers out of the market. Prices show little, if any, sign of revival.

Seattle—The scrap industry is marking time. Few sales have been made, and quoted prices are nominal. No improvement is expected for at least 30 days. The mills hold substantial inventories.

Dealers' stocks are 60 per cent below normal. Some yards are increasing inventories at today's depressed prices, but, generally, dealers are reducing their labor forces.

Only occasional sales are being made to Japan. That market shows no signs of early revival.

WE OWN and OFFER FOR SALE

OVERHEAD CRANES

CAPACITY	NAME	SPAN	LIFT
10	Shaw	47′	15′
15	Shaw	67′	26′
150 **	N B P	75′	40′
20 *	N B P	71′ 10″	25′ 6″
150 **	Shepard Niles	100′	39′
40 ***	Harnischfeger	98′ 10″	40′ 8″
20 *	Shepard Niles	98′ 10″	27′
20 *	Shaw	96′	27′
20 *	Shepard Niles	96′	28′
20 *	Shepard Niles	96′	26′
50 ****	Shepard Niles	100′ 6″	25′
20 *	P & H	100′ 6″	24′ 9″

* 20T. bridge with (2) 10 T. trolleys
** 150 T. bridge with only (1) 75 T. trolley (add'l. 75 T. trolleys may be available)
*** 40 T. bridge with (2) 20 T. trolleys
**** 50 T. bridge with (2) 25 T. trolleys

CAPACITY	NAME	SPAN	LIFT
10	Niles	64′ 8″	23′
10	Shaw	64′ 8″	22′
10	N B P	52′	19′
10	P & H	52′	19′
75 †	Shaw	75′	36′

† 150 T. bridge with only (1) 75 T. trolley which has 10 t. auxiliary

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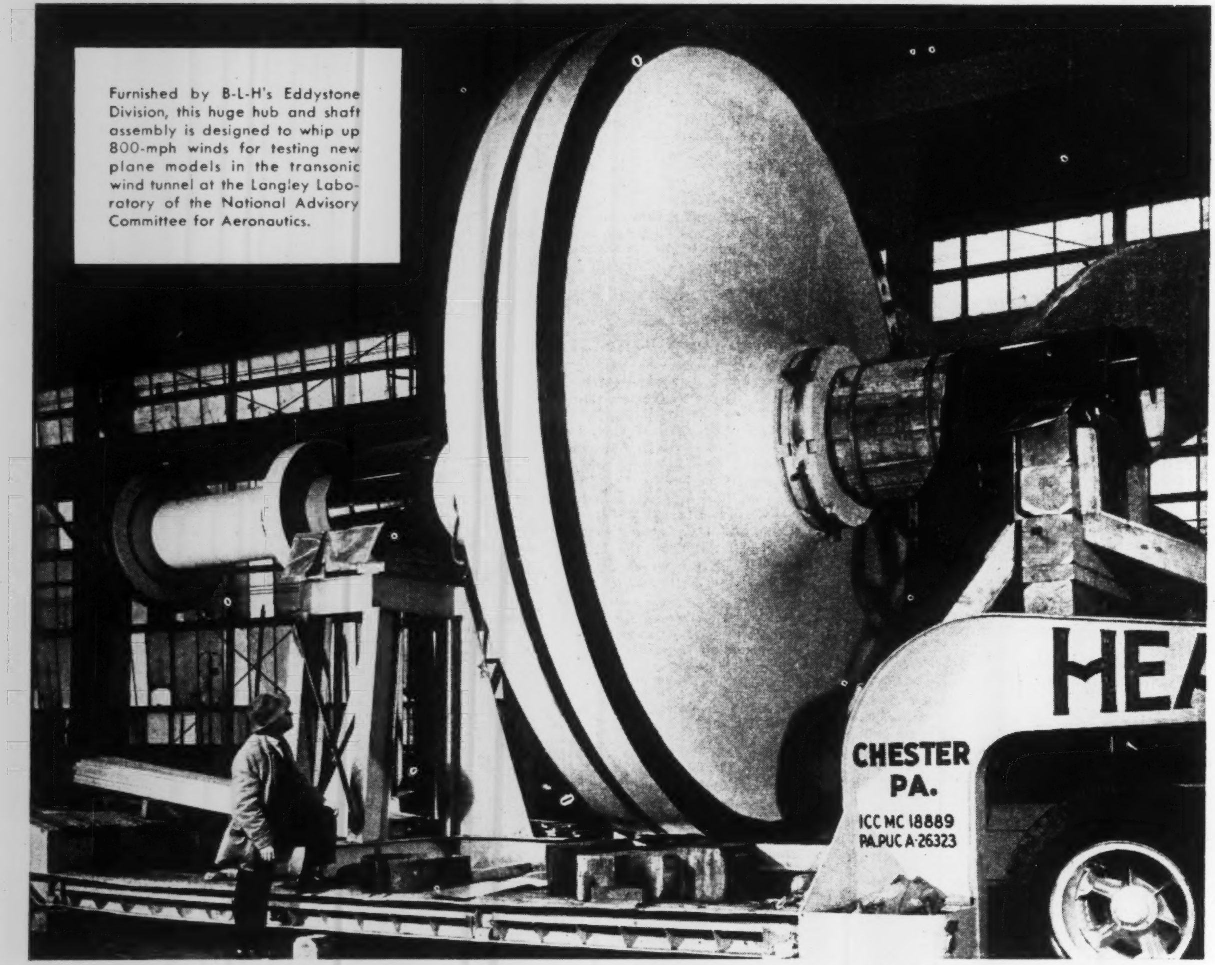
Furnished by B-L-H's Eddystone Division, this huge hub and shaft assembly is designed to whip up 800-mph winds for testing new plane models in the transonic wind tunnel at the Langley Laboratory of the National Advisory Committee for Aeronautics.

Baldwin licks another mammoth job . . . 110-ton hub and shaft assembly for transonic wind tunnel

Baldwin-Lima-Hamilton's Eddystone Division was recently faced with another of the enormous assignments that only a shop with its skills and facilities could dare accept . . . providing a gigantic hub and shaft assembly for the fan in the transonic wind tunnel at Langley Air Force Base, Va.

The shaft is 28 ft. long and weighs more than 30 tons. The finished hub weighs over 70 tons, and is 18 ft. in diameter, 44 in. thick at the center and 22 in. at the rim. Contouring, facing and boring were done on a 25-ft. vertical boring mill. Since conventional means were inadequate to slot the keyway in the bore, the bar was run up and down.

In order to attach the 47 fan blade sockets (which were welded by Baldwin and weighed 970 lb. each), 94 holes were drilled around the rim. The tolerance on the hole diameters was +.001 in., −0.0. *Furthermore, each blade socket had to fit any of the 47 positions.*

To shrink-fit the hub to the shaft, a temporary gas-fired furnace had to be built around the hub. After the hub was heated, the furnace was opened, the shaft was picked up by an overhead crane with a special lifting rig and lowered endwise into the shaft bore. It slipped in perfectly, and the retaining nut, weighing 1200 lb., was jacked up from below and screwed on by means of long-handled wrenches specially designed for this purpose.

The next time you need fabricating or machining work done, why not call on the company that has proved it can handle the very toughest jobs. For detailed information on any specific project or for a copy of our illustrated Bulletin 7001, write to B-L-H Corporation, Philadelphia 42, Pa.

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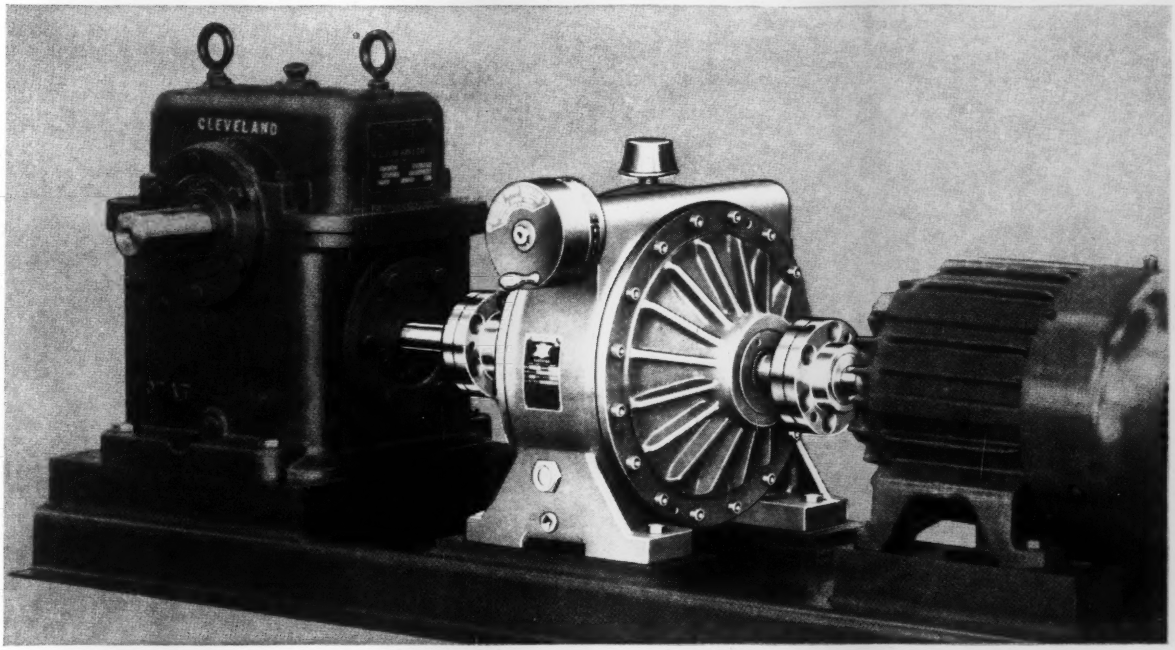


CLEVELAND SPEED VARIATOR

Supplemented with speed reducers can provide reduction ratios to 10,000:1

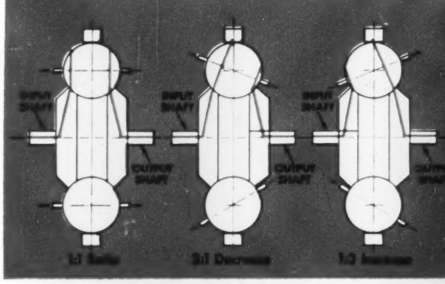
In installing a Cleveland Speed Variator, the higher the input speed (normally 1750 rpm), the smaller the unit needed. Where power must be delivered at speeds below the Variator's normal output shaft speeds, further reductions are available between Variator and driven equipment.

As illustrated above, the Variator may be assembled with a standard worm gear speed reducer or with integral double reduction helical gear trains. Write for Bulletin K-200. The Cleveland Worm & Gear Company, Speed Variator Division, 3270 East 80th Street, Cleveland 4, Ohio.

Note these major advantages of the Cleveland Speed Variator

1. An extremely compact unit, with input and output shafts in line and rotating in the same direction.
2. Operable at any input speed up to 1800 rpm—either clockwise or counterclockwise rotation.
3. Rated for constant horsepower output over a 9:1 or 6:1 range; or for constant torque over a 6:1 range.
4. Infinitely variable output speeds over the entire range of adjustment.
5. No slippage—positive, automatic torque adjustment in direct proportion to the loads encountered.

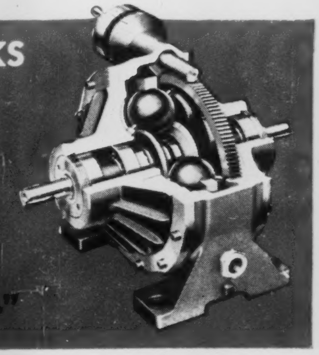
HOW THE CLEVELAND SPEED VARIATOR WORKS



Power is transmitted from input shaft to output shaft through alloy steel driving balls which are in pressure contact with discs attached to the two shafts.

Relative speeds of the shafts are adjusted by changing the positioning of axles on which the balls rotate (diagram, right, shows cutaway Variator with hand regulating wheel).

"It's the Drive That's on the Ball."



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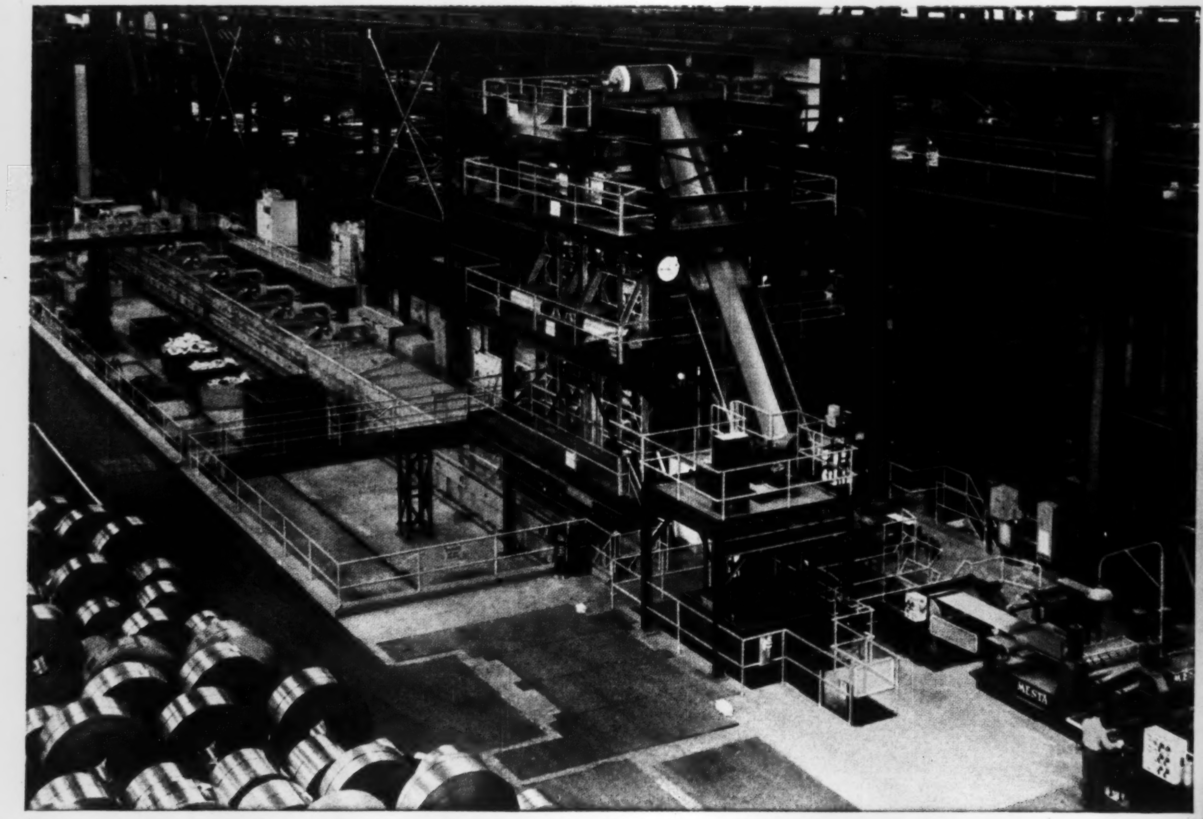

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